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THE IBIS,

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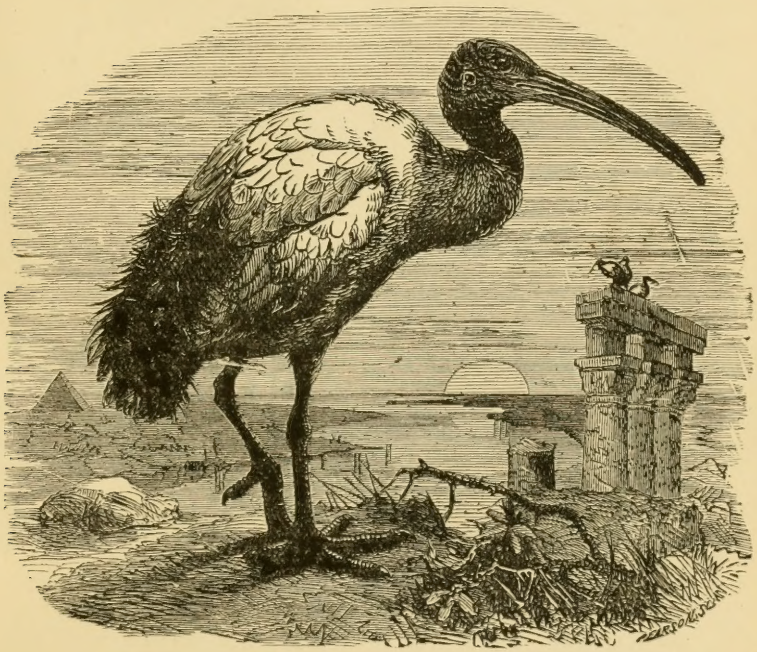
EDITED BY

WILLIAM LUTLEY SCLATER, M.A., F.Z.S.



VOL. IV. 1922.

ELEVENTH SERIES.

He prayeth well, who loveth well
Both man and bird and beast.

Smithsonian Institution
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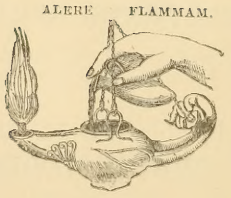

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VOLUME IV.

Number	1.	Issued	January	1st,	1922.
,,	2.	,,	April	5th,	,,
,,	3.	,,	July	1st,	,,
,,	4.	,,	October	9th,	,,

Officers of the British Ornithologists' Union, Past and Present.

Presidents.

1859–1867.	Col. Henry Maurice Drummond-Hay.
1867–1896.	Thomas Lyttleton Powys, Lord Lilford.
1897–1913.	Frederick Du Cane Godman, F.R.S.
1913–1918.	Col. Robert George Wardlaw-Ramsay.
1918–1921.	William Eagle Clarke, I.S.O., LL.D.
1921–	Henry John Elwes, F.R.S.

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1859–1864.	Philip Lutley Sclater, M.A., F.R.S.
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1883–1888.	Philip Lutley Sclater, M.A., F.R.S., *and* Howard Saunders.
1889–1894.	Philip Lutley Sclater, M.A., F.R.S.
1895–1900.	Philip Lutley Sclater, M.A., Ph.D., F.R.S., *and* Howard Saunders.
1901–1912.	Philip Lutley Sclater, M.A., Ph D , F.R.S., *and* Arthur Humble Evans, M.A.
1913–	William Lutley Sclater M.A.

LIST OF THE MEMBERS

OF THE

BRITISH ORNITHOLOGISTS' UNION.

1922.

[An asterisk indicates an Original Member. It is particularly requested that Members should give notice to the Secretary of the Union of any error in their addresses or descriptions in this List, in order that it may be corrected.]

Date of Election.

1916. Adams, Ernest Edward ; Lloyd's, Royal Exchange, E.C. 3.

1914. Aldworth, Capt. Thomas Preston, D.S.O. ; c/o The Manager, Martin's Bank, Dartford, Kent.

1911. Alexander, Horace Gundry ; 78 Gibbins Road, Selby Oak, Birmingham.

1920. Andrews, William Henry Makens ; Hethersett, Norwich.

1888. Aplin, Oliver Vernon ; Stonehill House, Bloxham, Oxon.

1919. Archer, Sir Geoffrey Frances, K.C.M.G. ; Government House, Berbera, Somaliland.

1919. Arnold, Edwin Carleton ; The College, Eastbourne.

1896. Arrigoni degli Oddi, Count Ettore, Professor of Zoology, University, Padua; and Ca'oddo, Monselice, Padua, Italy.

1901. Arundel, Major Walter B., F.Z.S. ; High Ackworth, Pontefract, Yorks.

1915. Ashby, Edwin ; Wittunga, Blackwood, Adelaide, S. Australia.

1901. Ashby, Herbert ; Broadway House, Brookvale Road, Southampton.

1908. Ashworth, John Wallwork, M.R.C.S., L.R.C.P., F.R.G.S., F.G.S. ; Thorne Bank, Heaton Moor, near Stockport, Cheshire.

1918. Astley, Arthur ; Freshfield, Ambleside, Westmorland.

1897. Astley, Hubert Delaval, M.A., F.Z.S. ; Brinsop Court, Hereford.

Date of Election.

1919. Backhouse, Thomas Porter: Trinity College, Cambridge; and 24 Green Street, Cambridge.

1921. Bailey, Major Frederick Marshman, C.I.E.; 7 Drummond Place, Edinburgh.

1892. Baker, Edward Charles Stuart, J.P., O.B.E., F.Z.S., F.L.S., H.F.A.O.U.; 6 Harold Road, Upper Norwood, S.E. 19. (*Hon. Secretary and Treasurer.*)

1906. Bannerman, David Armitage, M.B.E., B.A., F.R.G.S.; 60 Addison Road, W. 14; and British Museum (Nat. Hist.), Cromwell Road, S.W. 7.

1890. Barclay, Francis Hubert, F.Z.S.; The Warren, Cromer, Norfolk.

1885. Barclay, Hugh Gurney, F.Z.S.; Colney Hall, Norwich, Norfolk.

1903. Bartels, Max.; Pasir Datar, Halte Tjisaät (Preanger), Java, Dutch East Indies.

1906. Bates, George L., C.M.Z.S.; Bitye, *viâ* Ebolowa, Cameroon, West Africa.

1913. Baynes, George Kenneth; 120 Warwick Street, S.W. 1.

1912. Beebe, William, C.M.Z.S.; Tropical Research Station of the New York Zoological Society, Katabo, Bartica District, British Guiana.

1910. Beeston, Harry; Sunnymead, South Street, Havant, Hants.

1920. Belcher, Charles F.; Zomba, Nyasaland.

1897. Benson, John, P.O. Box 262, Vancouver, B. Columbia.

1897. Berry, William, B.A., LL.B.; Tayfield, Newport, Fifeshire.

1917. Bertram-Jones, John William; Kelvedon Hall, Brentwood, Essex.

1921. Best, Miss Mary G. S.; 32 Dover Street, W. 1.

1914. Betham, Brigadier-General Robert M., C.I.E.; c/o National Provincial and Union Bank of England, 208–209 Piccadilly, W. 1.

1921. Pettington, John Brindley; New College, Oxford.

1921. Beven, John Osmund, M.A., M.R.C.S., L.R.C.P.; The Portland Hotel, Great Portland Street, W. 1.

1920. Beveridge, Frederick Spencer; St. Leonards Hill, Dunfermline.

1907. Bickerton, William, F.Z.S.; Kingsmuir, 21 Oxhey Road, Watford, Herts.

Date of Election.

1880. Bidwell, Edward; 12 Woodberry Grove, Finsbury Park, N. 4.

1919. Bigger, Dr. William Kenneth, M.C.; P.M.O., Nazareth, Galilee, Palestine.

1892. Bird, The Rev. Maurice C. H., M.A.; Brunstead Rectory, Stalham, S.O., Norfolk.

1891. Blaauw, Frans Ernst, C.M.Z.S.; Gooilust, 's Graveland, Hilversum, Noord-Holland.

1913. Blackwood, George Glendinning, M.C.; 1 Blackness Crest, Dundee, N.B.

1903. Blathwayt, The Rev. Francis Linley, M.A.; Melbury Rectory, Dorchester, Dorset.

1914. Blyth, Robert Oswald, M.A.; Craigallion, Kilmacolm, Renfrewshire.

1897. Bonar, The Rev. Horatius Ninian, F.Z.S.; 22 Blackford Road, Edinburgh.

1905. Bone, Henry Peters; 5 Hamilton Mansions, King's Gardens, Hove.

1894. Bonhote, John Lewis, M.A., F.L.S., F.Z.S.; Park Hill House, Carshalton.

1906. Boorman, Staines; Heath Farm, Send, Woking, Surrey.

1898. Booth, George Albert; The Hermitage, Kirkham, Lancashire.

1904. Booth, Harry B., F.Z.S.; Ryhill, Ben Rhydding, *viâ* Leeds, Yorks.

1920. Borman, Major Frank William; 43 *a* Bow Lane, E.C. 4; and M.G.C. (1), The Residency, Cairo.

1908. Borrer, Clifford Dalison; 6 Durham Place, Chelsea, S.W. 3. (*Committee.*)

1918. Boyd, Capt. Arnold Whitworth, M.C. (Lancashire Fusiliers); Frandley House, Northwich.

1915. Bradford, Arthur Danby, F.Z.S.; Upton Lodge, Watford, Herts.

1895. Bradford, Sir John Rose, K.C.M.G., C.B., M.D., D.Sc., F.R.S., F.Z.S; 8 Manchester Square, W. 1.

1909. Briggs, Thomas Henry, M.A., F.E.S.; Sefton, Dawlish, South Devon.

1902. Bristowe, Bertram Arthur; Ashford Farm, Stoke D'Abernon, Cobham, Surrey.

1922. Brock, Wing Commander Henry Le Marchant, D.S.O., R.A.F., F.R.G.S.; Royal Air Force, Kenley, Surrey.

Date of Election.

1919. Brockelbank, Lt.-Col. Richard Hugh Royds, D.S.O., 9th Lancers; Watergate House, Bulford, Wilts.

1908. Brook, Edward Jonas, F.Z.S.; Hoddam Castle, Ecclefechan, Dumfriesshire.

1912. Brown, Thomas Edward; c/o Messrs. G. Beyts & Co., 11 Port Tewfik, Suez, Egypt.

1911. Buchanan, Captain Edward Mackenzie Murray; Leny, Callandar.

1907. Buckley, Charles Mars; 4 Hans Crescent, S.W. 1.

1906. Bucknill, Sir John Alexander Strachey, K.C., M.A., F.Z.S.; Supreme Court, Patna, India; and Athenæum Club, Pall Mall, S.W. 1.

1908. Bunyard, Percy Frederick, F.Z.S.: 57 Kidderminster Road, Croydon, Surrey.

1922. Burdett-Coutts, Seabury; 1 Stratton Street, Piccadilly, W. 1.

1907. Butler, Arthur Gardiner, Ph.D., F.L.S., F.Z.S.; 124 Beckenham Road, Beckenham, Kent.

1899. Butler, Arthur Lennox, F.Z.S.: St. Leonard's Park, Horsham, Sussex.

1905. Buxton, Anthony; Knighton, Buckhurst Hill, Essex.

1912. Buxton, Dr. Patrick Alfred; Government Laboratory, P.O. Box 595, Jerusalem, Palestine.

1896. Cameron, Major James S. (2nd Bn. Royal Sussex Regt.); Low Wood, Bethersden, Ashford, Kent.

1888. Cameron, John Duncan; Low Wood, Bethersden, Ashford, Kent.

1909. Carroll, Clement Joseph; Rocklow, Fethard, Co. Tipperary, Ireland.

1904. Carruthers, Alexander Douglas; Barmer Hall, King's Lynn, Norfolk.

1908. Carter, Thomas; Wensleydale, Mulgrave Rd., Sutton, Surrey.

1890. Cave, Capt. Charles John Philip, M.A., F.Z.S.; Ditcham Park, Petersfield, Hants.

1919. Chance, Edgar P.; 9 Hay Hill, Berkeley Square, W. 1.

1922. Chapin, James Paul; American Museum of Natural History, New York, U.S.A.

1919. Charteris, The Hon. Guy Lawrence; 26 Catherine Street, Buckingham Palace Road, S.W. 1.

1882. Chase, Robert William; Herne's Nest, Bewdley, Worcestershire.

Date of Election.

1908. Cheesman, Major Robert E.; c/o The High Commissioner, Baghdad, Mesopotamia.

1910. Chubb, Charles, F.Z.S.; British Museum (Natural History), Cromwell Road, S.W. 7.

1918. Chubb, Capt. Patrick Arthur; c/o London Joint City & Midland Bank, 8 New Coventry Street, W. 1.

1912. Clark, George Wingfield, M.A., F.Z.S.; "Homeland," Lode, Cambridge.

1904. Clarke, Major Goland van Holt, D.S.O., F.Z.S.; Chilworth Court, Romsey, Hants.

1916. Clarke, John Philip Stephenson; Borde Hill, Cuckfield, Sussex.

1889. Clarke, Col. Stephenson Robert, C.B., F.Z.S.; Borde Hill, Cuckfield, Sussex.

1880. Clarke, William Eagle, I.S.O., LL.D., F.L.S., F.R.S.E.; 53 North Castle Street, Edinburgh.

1904. Cochrane, Capt. Henry Lake, R.N.; The Chase, Whaddon, Bletchley, Bucks.

1895. Coles, Richard Edward; Rosebank, New Milton, S.O., Hants.

1911. Collett, Anthony Keeling; 5 Stone Buildings, Lincoln's Inn, W.C. 2.

1904. Collier, Charles, F.Z.S.; Bridge House, Culmstock, Devon; and Windham Club, St. James' Square, S.W. 1.

1919. Collinge, Dr. Walter Edward, D.Sc., M.Sc., F.L.S., F.E.S.; The Museum, York.

1909. Congreve, Capt. William Maitland, M.C.; Hafod, Trefnant, Denbighshire.

1913. Cook, James Pemberton; Kiora, Kiambu, Kenya Colony.

1914. Courtois, The Rev. R. L., S.J.; Director of the Sikawei Museum, near Shanghai, China.

1913. Cowan, Francis; Wester Lea, Murrayfield, Midlothian.

1920. Coward, Thomas Alfred, F.Z.S., F.E.S.; Brentwood, Bowdon, Cheshire.

1922. Cox, Denis; 24 Lincoln's Inn Fields, W.C. 2.

1922. Cox, His Excellency, Sir Percy Z., G.C.I.E., K.C.S.I., K.C.M.G.; The British Residency, Baghdad.

1894. Crewe, Sir Vauncey Harpur, Bt.; Calke Abbey, Derby.

1917. Cunningham, Josias, R.N.V.R.; Fernhill, Belfast.

Date of Election.

1916. Currie, Algernon James; Chief Audit Officer, S.P.R., Shiraz, *viâ* Bushire, S. Persia.

1915. Currie, Robert Alexander (Chinese Customs); The Custom House, Hankow, China.

1899. Curtis, Frederick, F.R.C.S.; Alton House, Redhill, Surrey.

1896. Danford, Lt.-Col. Bertram W. Y., R.E.; c/o Messrs. Cox & Co., 16 Charing Cross, S.W. 1.

105 1883. Davidson, James, F.Z.S.; 32 Drumsheugh Gardens, Edinburgh.

1921. Davies, Capt. Richard Rees; Carreg-yr-Halen, Menai Bridge, Anglesey.

1905. Davis, K. J. Acton, M.C., F.R.C.S., F.Z.S.; 24 Upper Berkeley Street, W. 1.

1921. Deane, Robert Heward; "Bariken," 23 Grange Road, Ealing, W. 5.

1920. Delacour, Jean; Chateau de Cleres, Seine Inférieure, France.

110 1909. Delmé-Radcliffe, Lt.-Colonel Alfred; Shenley House, Headcorn, Kent.

1920. Delmé-Radcliffe, Lt.-Col. Henry; c/o Cox & Co., F. Dept., 16 Charing Cross, S.W. 1.

1921. Dempster, George Edward William; 224 Tufnell Park Road, N. 19.

1902. Dent, Charles Henry; Snow Hall, Darlington, Durham.

1916. Despott, Giuseppe, Curator of the Natural History Museum, The University, Malta.

115 1921. Dewhurst, Capt. Frederick Wynford; "Elmwood," North-end Road, Hampstead, N.W. 3.

1893. De Winton, William Edward, F.Z.S.; 19 Ennismore Gardens, S.W. 7.

1889. Dobie, William Henry, M.R.C.S.; 2 Hunter Street, Chester.

1920. Donald, Charles Hilliard; Director of Fisheries, Dharmsala, Punjab, India.

1904. Drake-Brockman, Lt.-Col. Ralph Evelyn, D.S.O., M.R.C.S., L.R.C.P., F.Z.S.; "Eldama," Salvington, Worthing.

120 1890. Drummond-Hay, Col. James A. G. R. (Coldstream Guards); Seggieden, by Perth.

1878. Durnford, W. Arthur, J.P.; Elsecar, Barnsley, Yorks.

Date of Election.

1903. Earle, Edward Vavasour; "Riverside," South Darenth, Kent.

1914. Edwards, Laurence Albert Curtis, M.A.; The Museum, Wisbech, Cambridge.

1922. Edwards, Robert Edward Jones; The Cottage, Shenfield, Essex.

125 1895. Elliot, Edmund A. S., M.R.C.S.; Woodville, Kingsbridge, South Devon.

1884. Elliott, Algernon, C.I.E.; 41 Stanley Gardens, Hampstead, N.W. 3.

1866. Elwes, Henry John, F.R.S., F.Z.S.; Colesborne, Cheltenham, Gloucestershire. (*President.*)

1920. Evans, Lt.-Commander Arthur, R.N.; H.M.S. 'Vimeria,' c/o G.P.O., London.

1879. Evans, Arthur Humble, M.A., F.Z.S.; 9 Harvey Road, Cambridge.

130 1922. Evans, Eric; Coombe Croft, Lovelace Gardens, Surbiton, Surrey.

1888. Evans, William, F.R.S.E.; 38 Morningside Park, Edinburgh.

1916. Ezra, Alfred, F.Z.S.: Foxwarren Park, Cobham, Surrey.

1892. Fairbridge, William George; 141 Long Market Street, Capetown, South Africa.

1916. Falkiner, Capt. John McIntire, I.M.S., F.R.C.S.; Newara, Eliya, Ceylon.

135 1909. Fanshawe, Capt. Richard D. (late Scots Guards); The Cottage, Brimpton, Berks.

1921. Farquhar, Arthur McNeill; 55 Hans Road, S.W. 3.

1894. Farquhar, Admiral Sir Arthur Murray, K.C.B., C.V.O.; Acheron, Aboyne, N.B.

1898. Farquhar, Rear-Admiral Stuart St. J., R.N.; Naval & Military Club, Piccadilly, W. 1.

1921. Feasey, Gilbert George; 3 Oakdale Road, Streatham, S.W. 16; and Abinsi, *viâ* Lokoja, Northern Nigeria.

140 1921. Field, Frank James Richard; Gonda, Oudh, India.

1921. Finch, Lieut. Harold Bingley, M.C.; "Arundel," Prospect Road, Shanklin, Isle of Wight.

1901. Finlinson, Horace W., F.Z.S.; 5 Rosamond Road, Bedford.

1921. Fisher, Kenneth; The Briary, Eton College, Windsor.

Date of Election

1885. Fitzherbert-Brockholes, William Joseph; Claughton Hall, Garstang, Lancashire.

1902. Flower, Major Stanley Smyth, O.B.E., F.L.S., F.Z.S. (late 5th Fusiliers); Tring, Herts; and Kedah House, Zoological Gardens, Giza, Egypt.

1912. Floyd, James Francis Murray, B.A.; The University, Glasgow.

1912. Foster, Arthur H., M.R.C.S., L.R.C.P.; Sussex House, 88 Tilehouse Street, Hitchin, Herts.

1903. Foster, Nevin Harkness, F.L.S., M.R.I.A.; Hillsborough, Co. Down, Ireland.

1880. Foster, William; 39 Colville Gardens, Bayswater, W. 11.

1921. Francis, Richard Taunton, F.Z.S.; "Fairhaven," Peak's Hill, Purley, Surrey.

1895. Frohawk, Frederick William, F.E.S.; Uplands, Thundersley, Essex.

1909. Frost, William Edward, J.P.; Ardvreck, Crieff, Perthshire.

1881. Gadow, Hans, Ph.D., F.R.S., F.Z.S.; Cleramendi, Great Shelford, near Cambridge.

1907. Gandolfi, Alfonso Otho Gandolfi-Hornyold, Duke, Ph.D.; Blackmore Park, Hanley Swan, Worcestershire.

1922. Garnett, Miss Marjory; Dalegarth, Windermere, Westmorland.

1922. Gatehouse, Leslie Russell Alcock; Raby Vale, Thornton Hough, Cheshire.

1921. Gibb, David Eric Wilson; Bridgehouse, Gerrard's Cross, Bucks.

1902. Gibbins, William Bevington, F.Z.S.; Ettington, Stratford-on-Avon, Warwickshire.

1921. Gilbert, Capt. Humphrey Adam; New University Club, St. James's Street, S.W. 1.

1921. Gill, Edwin Leonard, M.Sc., Curator of the Hancock Museum, Barras Bridge, Newcastle-on-Tyne.

1919. Gillon, Mrs. Nina; 14 Carlton Terrace, Edinburgh.

1922. Gladstone, Charles Andrew; Eton College, Windsor.

1903. Gladstone, Capt. Hugh Steuart, M.A., F.Z.S., F.R.S.E., F.S.A.Scot.; Capenoch, Thornhill, Dumfriesshire; and 40 Lennox Gardens, S.W. 1. (*Committee.*)

1921. Glegg, William Edwin; The House, Albion Brewery, Whitechapel Road, E. 1.

Date of Election.

165 1921. Godman, Miss Eva M.; South Lodge, Horsham.

1908. Godman, Lt.-Col. Edward Shirley (2nd Dorset Regiment); Hampsteel, Cowfold, Sussex.

1922. Godman, James Frederick, Captain, Senior Game Warden; Arusha, Tanganyika Territory, East Africa; and Hampsteel, Cowfold, Sussex.

*1858. Godman, Percy Sanden, B.A., C.M.Z.S.; Hampsteel, Cowfold, Sussex. (*Gold Medallist.*)

1906. Goodall, Jeremiah Matthews; The Nest, Bembridge, Isle of Wight.

170 1900. Goodfellow, Walter, F.Z.S.; The Poplars, Kettering, Northants.

1920. Gordon, Mrs. Audrey; Otterburn Tower, Otterburn, Northumberland.

1921. Gordon, John G. M.; Corsemalzie, Whauphill, Wigtownshire, N.B.

1906. Gordon, Seton Paul, F.Z.S.; Auchintoul, Aboyne, Aberdeenshire.

1912. Gosse, Major Philip, M.R.C.S., L.R.C.P., R.A.M.C.; Savile Club, Piccadilly, W. 1; and 25 Argyle Road, Kensington, W. 8.

175 1899. Gould, Francis Herbert Carruthers, F.Z.S.; Matham Manor House, East Molesey, Surrey.

1920. Graham, Major Claude (Northampton Regt.); Army and Navy Club, Pall Mall, S.W.1; 2nd Northamptonshire Regt., Dalhousie, India.

1909. Grant, Capt. Claude Henry Baxter, F.Z.S.; c/o The Chief Secretary to the Government, Dar-es-Salaam, Tanganyika Territory; and Sports Club, St. James's Square, S.W. 1.

1918. Grant, Francis; 22 Bushmead Avenue, Bedford.

1913. Greening, Linnæus, F.L.S., F.Z.S.; Fairlight, Grappenhall, near Warrington, Cheshire.

180 1909. Grey of Falloden, The Rt. Hon. Edward, The Viscount, K.G., P.C., F.Z.S.; Falloden, Christon Bank, R.S.O., Northumberland.

1906. Griffith, Arthur Foster; 3 Evelyn Terrace, Brighton, Sussex.

1920. Griscom, Ludlow, 37 Fifth Avenue, New York, U.S.A.

1885. Guillemard, Francis Henry Hill, M.A., M.D., F.Z.S.; Old Mill House, Trumpington, Cambridge.

Date of Election.

1908. Gurney, Gerard Hudson, F.Z.S., F.E.S.; Keswick Hall, Norwich, Norfolk.

185 1870. Gurney, John Henry, F.Z.S.; Keswick Hall, Norwich; and Athenæum Club, Pall Mall, S.W. 1.

1896. Gurney, Robert, F.Z.S.; Ingham Old Hall, Stalham, Norfolk.

1891. Haigh, George Henry Caton, F.Z.S.; Grainsby Hall, Great Grimsby, Lincolnshire.

1887. Haines, John Pleydell Wilton; Spa Villas, Gloucester.

1898. Hale, The Rev. James Rashleigh, M.A.; Boxley Vicarage, Maidstone, Kent.

190 1913. Hardy, Rear Admiral Ernest Clifford, R.N.; Ramsden Court House, Stone-in-Oxney, near Appledore, Kent.

1900. Harper, Edmund William, F.Z.S.; 6 Ashburnham Road, Bedford.

1921. Harrison, Dr. James M., D.S.C., M.R.C.S., L.R.C.P.; St. Anne's, 1 Tubs Hill, Sevenoaks.

1893. Hartert, Ernst J. O., Ph.D., F.Z.S.; The Zoological Museum, Tring, Herts.

1900. Hasluck, Percy Pedley Harford; The Wilderness, Southgate, N. 14.

195 1898. Hawker, Richard Macdonnell, F.Z.S.; Bath Club, Dover Street, W. 1; and c/o Messrs. Dalgety & Co., 96 Bishopsgate, E.C. 2.

1918. Herbert, Capt. Edward Greville, R.A.F.; c/o Messrs. Cox & Co., R.A.F. Branch, 16 Charing Cross, S.W. 1.

1902. Hett, Geoffrey Seccombe, M.B., F.Z.S.; 8 Wimpole Street, W. 1.

1913. Hewitt, John, M.A.; Director of the Albany Museum, Grahamstown, South Africa.

1900. Hills, Lt.-Col. John Waller; 98 Mount Street, W. 1.

200 1884. Holdsworth, Charles James, J.P.; Fernhill, Alderley Edge, Cheshire.

1920. Holland, Eardley, F.R.C.S.; 55 Queen Anne Street, Cavendish Square, W. 1.

1905. Hopkinson, Emilius, M.B., D.S.O., F.Z.S.; 45 Sussex Square, Brighton, Sussex; and Bathurst, Gambia, West Africa.

1916. Hopwood, Cyril (Indian Forests); c/o Messrs. Thos. Cook & Son, Rangoon, Burma.

Date of Election.

1888. Horsfield, Herbert Knight; Crescent Hill, Filey, Yorks.

205 1895. Howard, Henry Eliot, F.Z.S.; Clarelands, near Stourport, Worcestershire.

1911. Hudson, Reginald; 16 Warwick Road, Stratford-on-Avon.

1920. Humphreys, George Rayner; Upton Lodge, Drumcondra, Dublin.

1920. Huxham, Engr.-Lt.-Commdr. Harold Hugh, D.S.O., R.N.; H.M.S. 'Dartmouth,' South American Station, c/o G.P.O. London; and "The Firs," Valley Road, Chandlers Ford, Hants.

1918. Inglis, Charles McFarlane; Baghownie Factory, Laheria, Serai P.O. Behar, India.

210 1901. Ingram, Capt. Collingwood, F.Z.S.; "The Grange," Benenden, Cranbrook, Kent.

1902. Innes Bey, Dr. Walter Francis; 6 Square Halim Pasha, Cairo, Egypt.

1913. Iredale, Tom; 39 Northcote Avenue, Ealing, W. 5. (*Committee*).

1888. Jackson, Sir Frederick John, K.C.M.G., C.B., F.L.S., F.Z.S.

1892. James, Henry Ashworth, F.Z.S.; Hurstmonceux Place, Hailsham, Sussex.

215 1920. Janson, Charles Wilfrid; 6 Hyde Park Square, W. 2.

1896. Jesse, William, B.A., F.Z.S.; Meerut College, Meerut, India.

1891. Johnston, Sir Harry Hamilton, G.C.M.G., K.C.B., F.Z.S.; St. John's Priory, Poling, near Arundel, Sussex.

1922. Jonas, William Howard Powning; Avonside, Fordingbridge, Hants.

1920. Jones, Alexander Edward; Tattersall House, Ambala, India.

220 1909. Jones, Surgeon-Commander Kenneth Hurlstone, M.B., Ch.B., F.Z.S., R.N.; H.M.S. 'Fisgurd,' Portsmouth.

1899. Jourdain, The Rev. Francis Charles Robert, M.A.; Appleton Rectory, Abingdon, Berks.

1902. Joy, Norman Humbert, M.R.C.S., L.R.C.P.; Theale, Berks.

1880. Kelham, Brigadier-General Henry Robert, C.B. (late Highland Light Infantry); Army and Navy Club, Pall Mall, S.W. 1; and Instow, near Barnstaple, N. Devon.

Date of Election.

1894. Kelsall, Lt.-Col. Harry Joseph, R.A.; c/o Messrs. Cox & Co., 16 Charing Cross, S.W. 1.

225 1897. Kelsall, The Rev. John Edward, M.A.; Milton Rectory, New Milton, Hants.

1904. Kelso, John Edward Harry, M.D.; Braeside, Edgewood, Lower Arrow Lake, British Columbia.

1914. Kennedy, Lt. John Noble, M.C., R.G.A., F.R.G.S.; United Service Club, Pall Mall, S.W. 1.

1891. Kerr, John Graham, F.R.S., F.Z.S., Regius Professor of Zoology: 9 The University, Glasgow.

1895. Kingsford, William Edward: Cairo, Egypt.

230 1922. Kinloch, Angus Peter Airlie Hamilton, F.Z.S.; Palagapandy Estate, Kollingode P.O., *via* Palghat, S. Malabar, S. India.

1902. Kinnear, Norman Boyd, C.M.Z.S.; British Museum (Natural History), Cromwell Road, S.W. 7.

1910. Kloss, Cecil Boden, F.Z.S., F.R.A.I.; Assistant Director of Museums, Kuala Lumpur, Federated Malay States.

1921. Knight, Capt. Charles William Robert, M.C.; Jessons, Sevenoaks.

1892. Laidlaw, Thomas Geddes; Bank of Scotland House, Duns, Berwickshire.

235 1913. Lambert, Godfrey Charles; Woodcote, Esher, Surrey.

1917. Lampard-Vachell, Benjamin Garnet; Pembroke College, Cambridge.

1884. Langton, Dr. Herbert; St. Moritz, 61 Dyke Road, Brighton, Sussex. (*Committee.*)

1881. Lascelles, The Hon. Gerald William, F.Z.S.; Tillington House, Petworth, Sussex.

1892. La Touche, John David Digues, C.M.Z.S.; St. Davids, Greystones, Co. Wicklow, Ireland.

240 1898. Learoyd, A. Ernest; 6 Lowndes Street, S.W. 1.

1910. Lemon, Mrs. Margaretta Louisa, F.Z.S.; Hillcrest, Redhill, Surrey.

1898. Le Souëf, Dudley, C.M.Z.S.; Director of the Zoological Gardens, Melbourne, Victoria, Australia.

1921. Lewis, Stanley; Highfield House, Hillfield, Cheddar, Somerset.

1921. Lewis, Sir Thomas, F.R.S., C.B.E., M.D.; 10 Chesterford Gardens, Hampstead, N.W. 3.

Date of Election.

1897. Lilford, John, Lord, F.Z.S.; Lilford Hall, Oundle, Northants.

1909. Lings, George Herbert; Richmond Hill, Cheadle, Cheshire.

1897. Lodge, George Edward, F.Z.S.; Hawkhouse, Park Road, Camberley, Surrey.

1908. Long, Sydney Herbert, M.D., F.Z.S.; 31 Surrey Street, Norwich, Norfolk.

1919. Longstaff, Capt. Tom George, M.A., M.D., F.Z.S.; Picket Hill, Ringwood, Hants.

1921. Low, Dr. George Carmichael, M.A., M.D., C.M., M.R.C.P.; 6 Bentinck Street, W. 1.

1904. Lowe, Percy Roycroft, O.B.E., B.A., M.B., B.C.; British Museum (Nat. Hist.), Cromwell Road, S.W. 7. (*Committee.*)

1914. Lowe, Willoughby Prescott: Gorsemoor, Throwleigh, Okehampton, Devon.

1920. Loyd, Captain Lewis Richard William; The Lookout, Branscombe, Beer S.O., S. Devon.

1921. Lucas, Nathaniel Sampson, M.B.; 19 Westbourne Terrace, Hyde Park, W. 2.

1920. Ludlow, Frank, M.A.; Club of Western India, Poona, India; and Priory Gate, Dunster, Somerset.

1920. Luke, Leonard Percival; Wellfield Terrace, Farsley, Leeds.

1904. Lynes, Rear-Admiral Hubert, C.B., C.M.G., R.N.; 23 Onslow Gardens, South Kensington, S.W. 7.

1920. Mackenzie, Colonel Alexander Francis, C.M.G., M.V.O. (late Argyle & Sutherland Highlanders); Ord House, Muir of Ord, N.B.

1917. Mackenzie, John Mitchell Douglas, B.A., C.M.Z.S., Indian Forest Service; c/o Thos. Cook & Son, Rangoon, Burma; and 6 The Circus, Bath.

1916. Mackworth-Praed, Cyril W.; Dalton Hill, Albury, Surrey; and 51 Onslow Gardens, S.W. 7.

1906. Macmillan, William Edward Frank; 42 Onslow Square, S.W. 7.

1920. Madoc, Lieut.-Colonel Henry William; Ashfield, Douglas, Isle of Man.

1906. Magrath, Lt.-Col. Henry Augustus Frederick, Indian Army (retired): Junior Constitutional Club, Piccadilly, W. 1.

Date of Election.

1921. Maidstone, Viscount; 23 Manchester Square, W. 1.

265 1917. Malcomson, Herbert Thomas; Glenorchy, Knock, Belfast.

1917. Mann, Capt. Edward Hamilton, M.C., F.R.G.S., R.F.A.; Junior United Service Club, Charles Street, S.W. 1.

1907. Mann, Thomas Hugh, F.Z.S.; Trulls Hatch, Rotherfield, Sussex.

1904. Manson-Bahr, Brevet-Major Philip Henry, D.S.O., M.D., M.R.C.P., R.A.M.C.; 32 Weymouth Street, W. 1.

1904. Mapleton-Bree, Harvey William, M.A.; Gable End, Allesley, Coventry.

270 1922. Marlow, Thomas, Timber Assistant; Tharrawaddy, Burma.

1894. Marshall, Archibald McLean, F.Z.S.; Great Chitcombe, Brede, Sussex.

1894. Marshall, James McLean, F.Z.S.; Bleaton Hallet, Blairgowrie, Perthshire.

1898. Massey, Herbert; Ivy Lea, Burnage, Didsbury, Manchester.

1921. Mathews, Allister William; Foulis Court, Fair Oaks, Hants.

275 1907. Mathews, Gregory Macalister, F.L.S., F.R.S.E., F.Z.S.; Foulis Court, Fair Oak, Hants.

1915. May, William Norman, M.D.; The White House, Sonning, Berks.

1921. McConnell, Arthur Frederick V.; Camfield Place, Hatfield, Herts.

1922. McKenna, Mrs. Pamela, J.P.; 36 Smith Square, Westminster, S.W. 1.

1921. McNeile, John Henry; 11 Embankment Gardens, S.W. 3.

280 1883. Meade-Waldo, Edmund Gustavus Bloomfield, F.Z.S.; Hever Warren, Hever, Kent.

1912. Meiklejohn, Lt.-Colonel Ronald Forbes, D.S.O. (1st Bn. Royal Warwickshire Regiment); c/o British Consul, Reval, Esthonia.

1899. Meinertzhagen, Lt.-Colonel Richard, D.S.O., F.Z.S. (Royal Fusiliers); 17 Kensington Park Gardens, W. 11.

1886. Millais, John Guille, F.Z.S.; Compton's Brow, Horsham, Sussex.

Date of Election.

1916. Millard, Walter Samuel, F.Z.S.; Boyne Lodge, Somerville Gardens, Tunbridge Wells.

285 1903. Mills, Canon Henry Holroyd, M.A., F.Z.S.; The Rectory, St. Stephen-in-Brannel, Grampound Road, Cornwall.

1879. Mitchell, Frederick Shaw; Hornshaws, Millstream, B.C., Canada.

1901. Mitchell, P. Chalmers, M.A., D.Sc., LL.D., F.R.S., F.L.S., F.Z.S.; Secretary to the Zoological Society of London, Regent's Park, N.W. 8.

1919. Montagu, The Right Hon. Edwin Samuel; 24 Queen Anne's Gate, S.W. 1.

1920. Moon, Dr. Harold Joseph, M.R.C.S., L.R.C.P.; 65 South Drive, St. Anne's-on-the-Sea, Lancashire.

290 1922. Mosley, Charles; 24 Upper George Street, Hudderfield.

1914. Moulton, Major John Coney, M.A., B.Sc., F.L.S., F.R.G.S., F.E.S.; Fort Canning, Singapore; The Hall, Bradford-on-Avon, Wilts.

1886. Muirhead, George, F.R.S.E.; Speybank, Fochabers, Morayshire.

1893. Mullens, Major William Herbert, M.A., LL.M., F.Z.S.; Westfield Place, Battle, Sussex.

1892. Munn, Capt. Philip Winchester, F.Z.S.; Puerto Alcudia, Majorca, Balearic Isles, Spain.

295 1897. Munt, Henry, F.Z.S.; 10 Ashburn Place, South Kensington, S.W. 7.

1910. Murray, Capt. Herbert Willaume, F.Z.S.; Rookfields, Reigate, Surrey.

1922. Murton, Mrs. Alice Hope, M.B.E.; Cranbrook Lodge, Cranbrook, Kent.

1920. Musselwhite, Donald Woodward; 7 Jessica Road, Wandsworth Common, S.W. 18.

1895. Nesham, Robert, F.Z.S., F.E.S.; Utrecht House, Poynder's Road, Clapham Park, S.W. 4.

300 1920. Nevill, Captain Thomas Nevill Carlton; Bramall Hall, Cheshire.

1929. Newman, John; Oare House, Oare, Brendon, North Devon.

1904. Newman, Thomas Henry, F.Z.S.; Verulam, Forty Lane, Wembley Park, Middlesex.

1917. Nicholl, Archibald M. C.; Royal Naval College, Osborne, Isle of Wight.

Date of Election.

1902. Nichols, John Bruce, F.Z.S.; Parliament Mansions, Victoria Street, S.W. 1.

305 1900. Nichols, Walter Buchanan; Stour Lodge, Bradfield, Manningtree, Essex.

1876. Nicholson, Francis, F.Z.S.; Ravenscroft, Windermere, Westmorland.

1902. Nicoll, Michael John, F.Z.S.; Valhalla House, Zoological Gardens, Giza, Egypt.

1921. O'Connell, John Henry, L.R.C.P. & S.I.; 38 Heathfield Road, Liverpool.

1920. O'Donel, Harry Victor; Hasimara T.E., Hasimara P.O., E.B. Railway, Duars, India.

310 1907. Oldham, Charles, F.Z.S.; The Bollin, Shrublands Road, Berkhamsted, Herts.

1922. Oliphant, Major Frederick Marcus; 24 Montpelier Street, Knightsbridge, S.W. 7.

1906. Osmaston, Bertram Beresford (Imperial Forest Service); Pachmarhi, C.P., India.

1913. Owen, John Hugh; Old School House, Felsted, Essex.

1921. Owen, Owen Rodenhurst; Bank House, Knighton, Radnorshire.

315 1919. Page, Wesley Theodore, F.Z.S.; Langstone, Lingfield, Surrey.

1921. Paget-Wilkes, Arthur Hamilton; 16 Holywell, Oxford; and Lincoln College, Oxon.

1880. Parkin, Thomas, M.A., F.L.S., F.Z.S.; Fairseat, High Wickham, Hastings, Sussex.

1908. Paton, Edward Richmond, F.Z.S.; Hareshawmuir, By Kilmarnock, Ayrshire, Scotland.

1921. Patten, Charles Joseph, M.A., M.D., Sc.D.; University, and 18 Broomhall Road, Sheffield.

320 1904. Pearse, Theed; P.O. Box 158, Courtenay, British Columbia.

1894. Pearson, Charles Edward, F.L.S.; Hillcrest, Lowdham, Notts.

1902. Pease, Sir Alfred Edward, Bt., F.Z.S.; Pinchinthorpe House, Guisborough, Yorkshire; and Brooks's Club, St. James's Street, S.W. 1.

1891. Penrose, Francis George, M.D., F.Z.S.; Rathkeale, 51 Surrey Road, Bournemouth.

Date of Election.

1900. Percival, Arthur Blayney, F.Z.S.; Game Ranger, Nairobi, British East Africa: Sports Club, St. James' Square, S.W. 1.

325 1912. Pershouse, Major Stanley; c/o Messrs. Cox & Co., 16 Charing Cross, S.W. 1.

1886. Phillips, Ethelbert Lort, F.Z.S.; 79 Cadogan Square, S.W. 1.

1920. Phillips, Montague Austin, F.L.S., F.Z.S.; Devonshire House, Reigate, Surrey.

1920. Phillips, Captain William Watt Addison; Anasigalla, Matugama, Ceylon; and Bowden Lodge, Russell Terrace, Leamington.

1914. Pitman, Capt. Charles Robert Senhouse (27th Punjabis); P.O. Box 39, Nakuru, Kenya Colony, East Africa.

330 1908. Player, W. J. Percy; Wernfadog, Clydach R.S.O., Glamorganshire.

1907. Pocock, Reginald Innes, F.R.S., F.L.S., F.Z.S.; Superintendent of the Zoological Gardens, Regent's Park, N.W. 8.

1917. Poliakov, Gregory T. (Editor 'Messager Ornithologique'); Moskva-Nijninovgorod Railway, Station Obiralovka, Savvino, Russia.

1896. Popham, Hugh Leyborne, M.A.; Houndstreet House, Pensford, Somerset.

1920. Pratt, Herbert; 62 Lyford Road, Wandsworth Common, S.W. 18.

335 1898. Price, Athelstan Elder, F.Z.S.; Salisbury Hall, St. Albans.

1922. Pring, Christopher John; Exeter College, Oxford; and North Curry Vicarage, Taunton, Somerset.

1903. Ralfe, Pilcher George; The Parade, Castletown, Isle of Man.

1903. Ratcliff, Frederick Rowlinson; 29 Connaught Square, W.2.

1917. Raw, William; 170 Newbridge Street, Newcastle-on-Tyne.

340 1894. Read, Richard Henry, M.R.C.S., L.R.C.P.; Church Street, Hanley, Staffordshire.

1888. Read, Robert H.; 8*a* South Parade, Bedford Park, W. 4.

1917. Reeve, Capt. John Sherard, F.Z.S.; Leadenham House, near Lincoln.

1903. Renaut, William E.; Royal Academy of Music, York Gate, Marylebone Road, N.W. 1.

1908. Richardson, Norman Frederic, F.R.G.S.; "Lynton," Brigstock Road, Thornton Heath, Surrey.

Date of Election.

1907. Richmond, Herbert William, M.A., F.R.S.; King's College, Cambridge.

1895. Rickett, Charles Boughey, F.Z.S.; 27 Kendrick Road, Reading, Berks.

1920. Ringrose, Bernard John; Wilford Rise, Bromeswell Heath, Woodbridge, Suffold.

1896. Rippon, Lt.-Col. George, F.Z.S.; The Clump, Buckland, Lymington, Hants; and United Service Club, Pall Mall, S.W. 1.

1907. Ritchie, Captain Archibald Thomas Ayres; c/o British East African Corps, Mombassa, B.E. Africa; and 16 Wilton Street, S.W. 1.

1902. Rivière, Bernard Beryl, F.R.C.S.; St. Giles's Plain, Norwich, Norfolk.

1898. Robinson, Herbert C., C.M.Z.S.; Selangor State Museum, Kuala Lumpur, Federated Malay States.

1912. Robinson, Herbert William, F.Z.S.Scot.; Patchetts, Caton, near Lancaster.

1917. Robinson, Sydney Maddock; c/o Col. J. H. Evans, Fraser Road, Rangoon, Burma.

1919. Robinson, Theodore Richard; Brunswick Lodge, Dunton Green, Kent.

1896. Rogers, Lt.-Col. John Middleton, D.S.O., F.Z.S. (late 1st Dragoons); Riverhill, Sevenoaks, Kent.

1913. Rogers, Reginald Nankivell; Carwinion, near Falmouth, Cornwall.

1922. Roper, Charles Herbert; Brookfield, Upper Park, Loughton, Essex.

1893. Rothschild, Lionel Walter, Lord, D.Sc., Ph.D., F.R.S., F.Z.S.; Zoological Museum, Tring, Herts. (*Vice-President.*)

1894. Rothschild, The Hon. Nathaniel Charles, M.A., F.Z.S.; Arundel House, Kensington Palace Gardens, W. 8.

1918. Rowan, William, The Dept. of Zoology, University of Alberta, Edmonton, Alta, Canada.

1910. Russell, Harold, F.Z.S.; 16 Beaufort Gardens, Chelsea, S.W.3.

1883. St. Quintin, William Herbert, F.Z.S.; Scampston Hall, Rillington, Yorkshire.

1903. Sandeman, Lt.-Col. Robert Preston (R. Gloucester Hussars): Dan-y Parc, Crickhowell, S. Wales.

Date of Election.

1889. Sapsworth, Arnold Duer, F.Z.S.; 30 Sussex Place, Regent's Park, N.W. 1.

1914. Sauer, Dr. Hans, F.Z.S.; Bath Club, Dover Street, W. 1; and Pinners Hall, Austin Friars, E.C. 2.

1909. Savage, The Rev. Ernest Urmson; Raughton Head Vicarage, Dalston, R.S.O., Cumberland.

1921. Schaanning, Hans Thomas Lange; Konservator, Stavanger Museum, Norway.

1891. Sclater, William Lutley, M.A., F.Z.S. 10 Sloane Court, Chelsea, S.W. 1. (*Vice-President & Editor.*)

1908. Seppings, Lt.-Col. John William Hamilton, F.Z.S.; c/o Sir Charles McGrigor, Bart., & Co., 39 Panton Street, Haymarket, S.W. 1.

1899. Serle, The Rev. William, M.A., B.D.; The Manse, Duddingston, Edinburgh.

1901. Seth-Smith, David, F.Z.S.; 34 Elsworthy Road, South Hampstead, N.W. 3.

1904. Seth-Smith, Leslie Moffat, B.A., F.Z.S.; Tangley, Caterham Valley, Surrey; and Nagunya, Kampala, Uganda.

1909. Seton, Sir Malcolm Cotter Cariston, K.C.B.; 26 Upper Park Road, Haverstock Hill, N.W. 3; and Union Club, Trafalgar Square, S.W. 1.

1917. Shipton, William, B.A., M.D.; 2 The Square, Buxton, Derbyshire.

1921. Shortridge, Guy Chesterton, M.B.E.; The Kaffrarian Museum, King Williamstown, Cape Colony.

1921. Sibour, The Vicomte Louis de, F.Z.S., F.L.S., F.R.M.S., Albert Villa, Shanklin, I. of Wight.

1920. Skea, Ernest Marcellus; Chief Assayer, Transvaal Gold Mining Estates, Ltd., P.O. Box 46, Pilgrims Rest, Transvaal.

1918. Sladen, Major Alexander George Lambart; Kingswood House, The Lee, Bucks; and Junior Carlton Club, S.W. 1. (*Committee.*)

1908. Smalley, Frederic William, F.Z.S.; "Hawthorns," 193 Clapham Road, S.W. 9.

1918. Smeed, Major Cecil William (late R.F.A.); Milend House, Westbourne, West Sussex.

1920. Smith, Desmond Abel; Longhills, near Lincoln.

Date of Election.

1922. Smith, Herbert Cecil, Deputy Conservator of Forests; Tharrawaddy, Burma; and c/oMessrs. Scott & Co., Rangoon.

1914. Smith, Lt.-Colonel John Lindsay (Indian Army); Supply & Transport Corps, Peshawur, N.W.F.P. India.

1918. Smith, Thomas; Whiston Eaves, Froghall, Stoke-on-Trent.

385 1921. Sowerby, Arthur de Carle; c/o H. K. Lewis & Co., Ltd., 136 Gower Street, W.C. 1.

1903. Sparrow, Colonel Richard, C.M.G., D.S.O., F.Z.S., F.R.G.S. (late 7th Dragoon Guards); Rookwoods, Sible Hedingham, Essex.

1906. Stanford, Surgeon-Commdr. Charles Edward Cortis, B.Sc., M.B., R.N.; 94 Jermyn Street, S.W. 1.

1910. Stanford, Edward Fraser; 12 A Maddox Street, Regent Street, W. 1.

1913. Stanford, Captain Henry Morrant, M.C., R.F.A., R.A. Mess, Woolwich.

390 1913. Stanford, Capt. John Keith, M.C.; c/o Messrs. Edward Stanford, Ltd., 12–14 Long Acre, W.C. 2.

1900. Stares, John William Chester; Portchester, Hants.

1921. Stendall, Jesse Austin Sydney; 12 Rossmore Avenue, Ballynafeigh, Belfast.

1902. Stenhouse, Surgeon-Capt. John Hutton, M.B., R.N.; Caledonian United Service Club, Edinburgh.

1910. Stevens, Herbert; Gopaldhara, Mirik P.O., Kurseong, Darjiling Himalayan Rly., India.

395 1914. Stewart, John; Mainshill, Beith, Ayrshire.

1922. Stewart, Samuel Findlater, C.I.E.; 71 Aberdare Gardens, N.W. 6.

1921. Stocks, Andrew Denys; 8 Old Square, Lincoln's Inn, W.C. 2; and Union Club, Trafalgar Square, S.W. 1.

1917. Stoneham, Capt. Hugh Frederic, O.B.E., F.E.S., 4th Battn. The King's African Rifles, Bombo, Uganda; and Army & Navy Club, Pall Mall, S.W. 1.

1921. Stoney, Cecil Vesey, J.P., D.L.; Oakfield Park, Raphoe, Co. Donegal.

400 1887. Styan, Frederick William, F.Z.S.; Stone Street, near Sevenoaks, Kent.

1914. Sutherland, Lewis Robertson, M.B., C.M., Medical School, Dundee, N.B.; Wellgate House, West Newport, Fife-shire.

Date of Election.

1905. Swann, Harold, F.Z.S.; The Lordship, Standon, Herts.

1920. Swann, Harry Kirke, F.Z.S.; Thorncombe, Lyonsdown Road, New Barnet, Herts.

1882. Swinhoe, Col. Charles, M.A., F.L.S., F.Z.S.; 4 Gunterstone Road, West Kensington, W. 14.

405 1884. Tait, William Chaster, F.Z.S.; Entre Quintas 155, Oporto, Portugal.

1911. Talbot-Ponsonby, Charles George; 5 Crown Office Row, Temple, E.C. 4.

1911. Tatton, Reginald Arthur; Cuerden Hall, Bamber Bridge, Preston, Lancs.

1914. Tavistock, Hastings William Sackville, Marquis of, F.Z.S.; Warblington House, Havant.

1905. Taylor, Lionel Edward, F.Z.S.; Bankhead, Kelowna, British Columbia.

410 1886. Terry, Major Horace A. (late Oxfordshire Light Infantry); Compton Grange, Compton, Guildford, Surrey.

1921. Thomas, Mrs. Rose Haig; 13 Arlington Street, S.W. 1.

1916. Thomasset, Bernard Charles, F.Z.S.; The Manor House, Ashmansworth, near Newbury, Berks.

1904. Thompson, Major William R., R.G.A.; Ravello, Carlton Road, Weymouth, Dorset.

1911. Thomson, A. Landsborough, O.B.E., D.Sc., F.Z.S.; 9 Addison Gardens, Kensington, W. 14.

415 1920. Thornhill, Lt.-Colonel Cudbert John Massy, C.M.G., D.S.O., Indian Army, Bath Club, Dover Street, W. 1.

1893. Thorpe, Dixon L.; Loshville, Etterby Scaur, Carlisle Cumberland.

1903. Ticehurst, Claud Buchanan, M.A., M.D., M.R.C.S.; 121 London Road North, Lowestoft.

1894. Ticehurst, Norman Frederic, M.A., M.B., F.R.C.S., F.Z.S.; 24 Pevensey Road, St. Leonards-on-Sea, Sussex.

1902. Townsend, Reginald Gilliat, M.A.; Critchells, Lokerley, Romsey, Hants.

420 1893. Trevor-Battye, Aubyn, M.A., F.L.S., F.Z.S.; Ashford Chace, Petersfield, Hants: and Royal Societies Club, St. James's Street, S.W. 1.

1922. Tucker, Bernard William; Magdalen College, Oxford; and Chewton House, Chewton, Mendip, Bath.

Date of Election.

1913. Tuckwell, Edward Henry, F.Z.S.; Berthope, Compton, near Guildford, Surrey.

1921. Tutt, John Francis Donald, M.R.C.V.S., F.L.S., F.E.S., F.R.M.S., F.Z.S.; 1 St. Cross Road, Winchester, Hants.

1911. Tyrwhitt-Drake, Hugh Garrard, F.Z.S.; Cobtree, Sandling, Maidstone, Kent.

425 1918. Vaizey, George de Horne; 53 The Pryors, Hampstead, N.W. 3.

1918. Vaizey, Ker George Russell; 26 Cornwall Gardens, S.W. 7.

1910. Van Someren, Dr. Robert Abraham Logan; Jinja, Uganda.

1912. Van Someren, Dr. Victor Gurnet Logan; c/o Medical Dept., P.O. Box 140, Nairobi, Kenya Colony.

1913. Venning, Lt.-Col. Francis Egmond Wingate; The Croft, Yateley, Hants.

430 1922. Vicary, Walter Palmer, R.N.; Dryons, Newton Abbot, S. Devon.

1886. Wade-Dalton, Col. H. D.; Hauxwell Hall, Finghall R.S.O., Yorkshire.

1916. Wait, Walter Ernest, Land Settlement Dept., Colombo, Ceylon.

1918. Walker, Alexander Hope, M.D., L.R.C.P., M.R.C.S.; The Common, Cranleigh, Surrey.

1914. Wall-Row, John; 51 Courtfield Gardens, S.W. 5.

435 1895. Wallis, Henry Marriage; Ashton Lodge, Christchurch Road, Reading, Berks.

1920. Ward, Major Edward Hugh; R.M.A.; The Craigs, Landscore Road, Teignmouth, Devon.

1920. Waydelin, Frederick John; Haverhill, Whitchurch, Hants.

1920. Webber, Captain William Beare Incledon; Buckland House, Branton, N. Devon.

1912. Wells, Charles Henry; Broomfield, 80 Brookhouse Hill, Fulwood, Sheffield.

440 1921. Wells, Thomas; Natural History Museum, South Kensington, S.W. 7.

1912. Wenner, Max Victor; Lake House, Sutton, near Macclesfield, Cheshire.

1922. Weston, Charles Frederick Russell Nugent; Tuesnoad, Bethersden, Kent.

Date of Election.

1913. Whistler, Hugh, F.Z.S. (Indian Police); Caldbec House, Battle, Sussex; and c/o Messrs. King, King & Co., Bombay, India.

1918. Whitaker, Capt. John Albert Charles (Coldstream Guards); Babworth Hall, Retford, Notts.

445 1891. Whitaker, Joseph I. S., F.Z.S.; Malfitano, Palermo, Sicily.

1909. White, Henry Luke; Belltrees, Scone, New South Wales, Australia.

1903. White, Stephen Joseph, F.Z.S.

1912. Whymper, Samuel Leigh; Oxford Mansions, Oxford Street, W. 1; and Oriental Club, Hanover Square, W. 1.

1914. Wickham, Percy Frederic; c/o Messrs. Thos. Cook & Son, Rangoon, Burma.

450 1915. Wild, Oliver Hilton; Ariel Lodge, Cheltenham, Gloucestershire.

1894. Wilkinson, Johnson; Vermont, Huddersfield, Yorkshire.

1912. Wilkinson, William Arthur, F.L.S., F.Z.S.; Lindum House, Anchorage Road, Sutton Coldfield, nr. Birmingham.

1916. Williamson, Walter James Franklin, C.M.G., F.Z.S. (Financial Adviser to the Government of Siam); Bangkok, Siam.

1920. Wilson, Commander Alec Thomas Lee, J.P., R.N.; Garth House, Garth, Brecknockshire.

455 1897. Wilson, Allan Read, B.A., M.D., B.Ch. (Oxon.); Eagle House, Blandford, Dorset.

1888. Wilson, Charles Joseph, F.Z.S.; 14 Suffolk Street, Pall Mall, S.W. 1.

1897. Witherby, Harry Forbes, M.B.E., F.Z.S.; 12 Chesterford Gardens, Hampstead, N.W. 3.

1908. Witherington, Gwynne; 19 Sumner Place, South Kensington, S.W. 7.

1899. Wollaston, Alexander Frederick Richmond, B.A.; King's College, Cambridge.

460 1922. Wood, Colonel Casey Albert, M.D.; c/o The Library, McGill University, Montreal, Canada.

1912. Wood, Martin Stanley, M.D., R.A.M.C.; Cheadle Royal, Cheadle, Cheshire.

1917. Woodford, Capt. Charles Edward Montgomerie (1st Battn. Sherwood Foresters); 8 Dry Hill Park Road, Tonbridge, Kent.

Date of Election.

1912. Woodhouse, Cecil, M.D.; Coaxdon Hall, Axminster, South Devon.

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ELEVENTH SERIES.

VOL. IV. No. 1. JANUARY 1922.

I.—*Notes on some Birds from the Near East and from Tropical East Africa.* By Colonel R. MEINERTZHAGEN, D.S.O., F.Z.S., M.B.O.U.

(Text-figures 1–7.)

[Continued from Ibis, 1921, p. 671.]

PHYLLOSCOPUS COLLYBITA.

Phylloscopus collybita collybita (Vieill.).

Out of a large series of *Phylloscopus* from tropical eastern Africa not one is a Chiffchaff, and, moreover, I can find no record of the species from this region.

Its southern winter limit appears to be a line across Africa from (in the west) Senegambia, through north-central Sahara, Bahr el Ghazal, southern Abyssinia, and northern Somaliland. I found the Chiffchaff common in the Siwa Oasis in January, and it is a common winter visitor to Egypt, the latest spring record being on 1. iv.

Quite a number appear to winter in the Jordan Valley in Palestine, where they were common from November to February, after all *Phylloscopus trochilus* had gone farther south. Common on passage at Damascus in October.

Text-figure 1.

Sketch-map of Egypt to show localities where birds were collected.

Text-figure 2.

Sketch-map of Palestine and Syria to show localities where birds were collected.

Phylloscopus collybita abietana.

The only specimen I obtained was at Damascus on 10. ix. This race also winters in Egypt, the latest spring record being on 11. iv.

PHYLLOSCOPUS TROCHILUS.

Phylloscopus trochilus trochilus (L.).

In Palestine and Egypt the Willow-Wren is but a bird of passage. Tristram ('Survey of Western Palestine') records it as swarming in the Jordan Valley in winter, but I think all these birds must have been Chiffchaffs. In Palestine autumn passage lasts from the last few days of August to the last week in October.

In Egypt autumn passage lasts about the same period; late birds were seen by Lynes till 18. xi. at Port Said.

On 19. v. 20 I shot a solitary Willow-Wren at Suez. This is the first spring record for Egypt. In Palestine spring passage occurs from the middle of March to the end of April.

Birds do not arrive in any numbers in Kenya Colony and Uganda till the middle of September, and from then on they are common, new arrivals pouring in as late as December and January. They commence moving north from Kenya Colony in early March, my latest spring record being on the Victoria Nyanza on 7. iv. It was obtained by Archer in northern Somaliland on 21. iv.

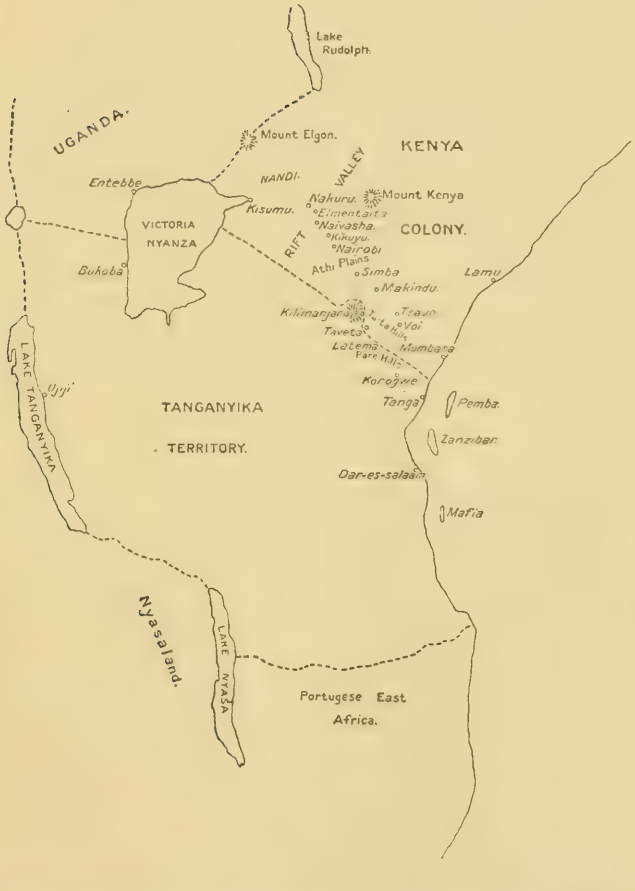
Phylloscopus trochilus eversmanni (Bp.).

Five out of a large series of Willow-Wrens from Kenya Colony prove to be this race. They were obtained at Nairobi on 29. xi. and near the Victoria Nyanza from 23. x. to 25. iii.

Locustella luscinioides luscinioides (Savi).

I obtained a young bird, scarcely able to fly, at Damascus on 10. ix. and an adult male in the Jordan Valley near Jericho on 15. ix. They probably breed in both localities. Several others were seen in both places from September to the end of November.

Text-figure 3.



Sketch-map of part of eastern tropical Africa to show localities where birds were collected.

Locustella fluviatilis (Wolf).

In my African collection are two females obtained at Taveta near Kilimanjaro in December. Alexander obtained a specimen at Zumbo on the Zambesi in winter. Their skulking habits probably account for the paucity of African records.

Hippolais languida (Hemp. & Ehr.).

A scarce winter visitor to tropical eastern Africa. I have specimens from Lake Rudolf in March and from the Taita Hills in Kenya Colony in December. Lönnberg obtained one on the northern Guaso Nyero in Kenya Colony, and Reichenow records (Vög. Afr.) winter birds from the Latema and Pare Hills between Kilimanjaro Mountain and the coast. They arrive early in Africa, as is evidenced by birds in Archer's Somaliland collection, which were obtained on 20. vii. and 29. viii.

HIPPOLAIS PALLIDA.

Hippolais pallida elæica (Lindermayer).

A common summer visitor and breeding bird throughout Syria and Palestine from Aleppo and Damascus to the Jordan Valley. I did not observe them in the Judæan highlands.

All winter visitors of this species to Kenya Colony appear to belong to this race. From December to late March they are common from Uganda to the coast, my latest spring record being from Kisumu on the Victoria Nyanza on 1. iv.

Hippolais pallida pallida (Hemp. & Ehr.).

So far only known to breed in Egypt, where it is an abundant summer visitor, arriving from the south in the middle of March and leaving in September and early October. It appears to be absent as a breeding species from Suez. Birds probably winter not farther south than the Sudan or southern Abyssinia.

ACROCEPHALUS SCIRPACEUS.

An examination of the series at Tring, together with 40 birds collected by me in Syria, Palestine, and East Africa, show clearly the differences between the eastern and western races of the Reed-Warbler.

Acrocephalus s. scirpaceus (Hermann).

Sylvia strepera Vieillot, 1817.

A darker and richer red throughout. Wing of 32 males 64–68 mm., and of 19 females 63–66 mm.

Breeds apparently in western Europe, east at least to Switzerland and central Germany. Occurs on passage in Rumania (Sept.), Italy (Oct.), central Pyrenees (Sept.), at Madrid (Feb.), in southern France (Sept.), and Algerian Sahara (May). Winters in tropical Africa—south-western Uganda (Dec. and Jan.), on the Victoria Nyanza (Jan. and Feb.), in Tanganyika Territory (2 birds Sept. and Jan.), and on the Gambia.

Acrocephalus s. crassirostris (Brehm), Vögelfang, p. 235, 1855: Egypt.

A. s. macronyx (Severtzoff, 1873), Hartert, Vög. pal. Faun. p. 561.

I have examined the type of *Calamoherpe crassirostris*, a male shot in Upper Egypt on 10. v., and I find it identical with a male obtained at Simba in British East Africa on 19. xii. Brehm's bird is in very worn plumage and my Simba bird has apparently missed its autumn moult. I have also examined over 50 specimens of this pale form from Transcaspia, southern Russia, Egypt, tropical Africa, and southern Arabia. I cannot separate these from Brehm's type of *crassirostris*. Under these circumstances, however distasteful, we must accept the older name, and *macronyx* becomes a synonym.

A paler race, closely resembling *Acrocephalus palustris* in colour, but nearly always browner on the back and rump. The only other reliable test between this race and *Acrocephalus palustris* seems to be the notch on the inner web of

the second primary, which is more or less level with the tip of the secondaries, whereas in *palustris* the notch on the second primary is usually well in front of the secondaries. Some specimens are almost impossible to determine.

Wing slightly larger, of 31 males 66–71, and of 19 females 64–68 mm.

Breeds at the mouth of the Volga, in Transcaspia, Turkestan, Persia and Persian Baluchistan, and perhaps in Egypt. Plentiful on passage in Palestine from August to October and again in March, in Egypt in October and April, in Sinai in August and September, and in southern Arabia in April.

Winters in Kenya Colony (Sept. to April) and in Tanganyika Territory (March and April).

Sylvia nisoria nisoria (Bechst.).

A not uncommon visitor to Kenya Colony from early November to January, being obtained on Lake Rudolf, at Tsavo and Simba. All are of the typical race. It is curious that this bird, so common at Port Sudan on the western Red Sea Littoral on passage, should so far not have been obtained in Egypt.

Sylvia atricapilla atricapilla (L.).

In some winters the Blackcap is very common in Kenya Colony, in others it is scarce. Autumn arrivals first appear about the middle of November, at Nairobi and Nakuru in Kenya Colony. The latest spring record is on 16.iii. on Mount Elgon. Wings of 19 eastern African birds vary from 71 to 78 mm.

In Palestine I observed spring passage only on 28.iv., when a flock of about 18 females were seen in a very tired condition near Jerusalem.

Sylvia borin (Bodd.).

Ten birds obtained in eastern Africa from 4.x. to 1.iii. have wings varying from 74 to 80 mm. and culmens from 13·5 to 15 mm. Ten passage migrants from Egypt have wings varying from 76–80 mm. and culmens from 16–17 mm.

A series of seven birds from Sarepta in southern Russia have wings varying from 79–83 mm. and culmens of 14 mm. As Hartert points out (Vög. pal. Fauna, p. 582), eastern birds are as a rule larger than western birds, especially the winter visitors to eastern and southern Africa.

Now the eastern African, Egyptian, and southern Russian birds mentioned above are also rather paler (greyer) both above and below than other European birds.

Winter birds from Sierra Leone agree with the darker and more yellow form from western and southern Europe, whilst the paler and greyer birds appear to winter in southern and eastern Africa west to Lake Tanganyika. Birds from Palestine on autumn passage from 27. viii. to 6. x. would appear to include both races.

Now my experience goes to show that in any species with a wide range, those birds which breed in a country which suffers from a severe winter, travel farther south in winter than those birds which breed in a more equable climate, even though both communities entirely evacuate their breeding-quarters during the winter months. I am therefore inclined to think that those Garden-Warblers which we find in tropical and southern Africa in winter are the birds which breed in Russia and central Asia. This theory is also borne out by the size and paler colour of winter birds from such southern climes.

It certainly looks as though we must accept an eastern and western race of the Garden-Warbler, basing the eastern race on an average larger size and paler plumage. Johansen (Orn. Jahr. xviii. 1907, p. 199) has already named a race from western Siberia *pallida*, but it is based on paler colour and *smaller* size.

SYLVIA COMMUNIS.

Sylvia communis communis Latham.

All my winter birds from Kenya Colony are of the typical race. They appear to arrive in late October or early November and remain the winter, stretching south to Dar-es-Salaam (25. xi.). My latest spring record is at Kilimanjaro on 26. iii.

In Palestine it is a common bird of passage in spring from early March, the main stream of migrants passing up the Jordan Valley and Sea of Galilee, and not up the coast.

Sylvia communis icterops Ménétries.

A rare breeding species in the coastal plains of Palestine. Obtained at Ludd on 1. v.

Sylvia curruca curruca (L.).

Common on spring passage in 1920 on the Sea of Galilee in Palestine from 3. iii., but in Egypt spring passage occurred in the same year from 24. iii. to 11. iv.

Sylvia conspicillata conspicillata Temm.

A few are resident in the Jordan Valley near Jericho, where I saw them throughout the winter and found a nest with one egg on 29. iv.

In Egypt they are common on the scrubby desert fringing the Delta and on Lake Moeris in the Fayoum, and though I only observed them from October to January, they probably breed in these localities, as I found two old nests undoubtedly of this species.

AGROBATES GALACTOTES.

Agrobates galactotes syriacus (Hemp. & Ehr.).

In my African collection are three examples from Voi and Taveta in Kenya Colony obtained in March and December. There is little doubt that *Agrobates familiaris psammochrous* of Reichenow (Vög. Afr.) recorded from eastern Africa is of this race (*cf.* Hartert, Vög. pal. Fauna, p. 605).

In a paper on the birds of Turkanaland by Van Someren (Journ. East Afr. & Uganda N. H. S., no. 16, 1921, p. 27), in which trinomials are largely ignored thereby rendering most palæarctic material useless, *Agrobates g. minor* is said to have been obtained in western Rudolf. The wings of six birds are given as 86–93 mm. It is clear from this that the specimens cannot be *minor*, whose wing rarely exceeds 82 mm. They are probably *syriacus*.

Agrobates galactotes galactotes (Temm.).

Does not appear to winter much south of the line Bahr el Ghazal, Khartoum, Port Sudan.

A very common summer visitor to Egypt, Suez, and Palestine, commencing to arrive in Egypt during the first few days of April and in Palestine during the second week in April. In summer they swarm throughout the Jordan Valley and the coastal plain. I saw a few in Jerusalem at the end of April 1920, but I have no record of their breeding in the Judæan highlands.

CISTICOLA CISTICOLA.

Cisticola cisticola neurotica Meinertz. Bull. B. O. C. xli. 1920, p. 25.

The upper parts of this Palestine race are paler and greyer than in *C. c. cisticola*, but not so pale as *aridula* or *arabica*, or as a specimen from Mesopotamia which I have seen in the Tring collection.

An uncommon and local resident, chiefly in the coastal region of Palestine from near Beirut to Jaffa. Not seen in the Jordan Valley or on the Judæan highlands.

Cisticola cisticola cisticola (Temm.).

Birds from the Egyptian Delta are puzzling. I have seen some which agree well with the typical race; in fact the majority seem to do so, but there are in the British Museum a small series which more closely resemble *harterti*. Witherby (Bull. B. O. C. xl. 1920, p. 119) thought they all belonged to *harterti*, which is not the case.

This race seems to be the resident race in northern Africa, Spain north to Valencia, and the Balearic Islands.

Cisticola cisticola harterti Witherby.

The resident race in southern France, Italy, Sicily, Sardinia, Asia Minor at Smyrna and Aidin, and partly in Egypt.

Cisticola cisticola annæ, subsp. nov.

Birds from Cyprus are intermediate between the typical form and *C. c. harterti*. They are not so dark as *C. c. cisticola* and not so red as *C. c. harterti*. They also have weaker bills. Eight examined from Cyprus have wings 45 to 50 mm.

Type : (unsexed) Famagusta, 27. x. 1901. Collected by Miss D. Bate. B.M. Reg. No. 1903.8.2.99.

Cisticola cisticola berberæ, subsp. nov.

A series of four examined, collected by Archer in northern British Somaliland. They are greyer even than *arabica*, almost completely lacking the rufous on the rump and lower back. Centres of the feathers on the head and back not so dark. Flanks and thighs with much less rufous than in *arabica*. A much paler and greyer bird than *uropygialis*.

Paler than birds in similar plumage from Socotra (*C. c. hæsitata*) and with a paler buff tone on the rump. Larger than *C. c. hæsitata*.

Wings of four *C. c. berberæ* 50–51, and of five *C. c. hæsitata* 47–49 mm. Culmen slightly longer than *C. c. hæsitata*.

Birds from north-western British Somaliland, at Makanis, and from Abyssinia, that is to say west of long. 43° E., appear to belong to *C. c. uropygialis*.

Type, ♂ : near Berbera at 3000 feet, shot on 13. i. 1919 (Archer coll.).

Turdus philomelos philomelos Brehm.

I have examined the series of Continental Song-Thrushes at Tring from East Prussia, Russia, Switzerland, Cyprus, Algeria, and Morocco, together with birds collected by myself in Palestine and Egypt, and I am unable to confirm Zedlitz's conclusion (J. f. O. 1919, p. 489), in which he names the central European Thrush *brehmi* on account of the brighter underparts, darker breast-spotting, and olive-brown upper parts, in contrast to the distinct grey of the more northern bird.

I find that variation is not in accordance with geographical distribution, but is individual and seasonal. There is very little in size, though birds from the eastern part of the range of the species do contain some huge individuals. A winter male from Palestine has a wing of 125 mm.; this is the largest Song-Thrush I have measured.

Monticola saxatilis (L.).

I am only dealing with the migratory movements of the Rock-Thrush in the Near East and down the eastern half of the African continent.

In Palestine the bird breeds only rarely among the highest peaks of the Lebanon and Hermon systems, and is not often seen passing through Palestine to and from its breeding grounds. It appears to arrive in the first half of April and commences to depart during the last days of August.

In Cyprus, autumn passage is probably at its height between 27. viii. and 24. ix.

In Egypt, Nicoll states they are common on spring and autumn passage, but they appear to be commoner in spring than in autumn. Autumn passage in Egypt occurs from about 28. viii. to the end of September. I do not believe they winter in Egypt.

The Rock-Thrush is a common winter visitor to the Sudan from late September to April, and occurs in northern Somaliland in January. Young birds commence to arrive in northern Somaliland in the second half of September, adults appearing in early October. In Kenya Colony they commence to arrive about Nairobi and Naivasha during the last week of October. I can find no winter record of birds in eastern Africa south of a line from Bagomoyo on the coast just north of Dar-es-Salaam to Ujiji, the terminus of the Central Railway on Lake Tanganyika.

Birds commence to move north from the tropics towards the end of March when the majority leave, and they pass north in Somaliland in the second half of March and through Egypt during the last few days of March and throughout

the first half of April. A few stragglers may be seen later.

On the eastern coast of Africa spring passage seems to be slightly later—from 20. iii. to 16. iv. Birds have been shot in Abyssinia as late as 31. iv. and in Sinai from 1. iv. to 22. iv.

On autumn passage the birds of the year appear to leave first and they certainly arrive first in the tropics, the first adults not being seen till December or January in Kenya Colony.

On spring passage on the coast of eastern Africa, the bulk of the first birds to move are old males, and the bulk of the late migrants are females. In Egypt all the first spring passage migrants are males.

Monticola solitarius L.

All spring migrants through Egypt belong to the eastern race *transcaspicus* (8 examined). A winter (January) bird from Sollum in western Egypt is of the same race. Winter visitors to Palestine are *transcaspicus* and *M. s. solitarius*.

I have not been able to examine authentic breeding birds from Palestine or Egypt: the breeding race in Crete is *M. s. solitarius*. Winter birds to Somaliland are the typical race.

Œnanthe œnanthe (L.).

I have recently examined the series of Common Wheatears in the Tring collection, including the supposed races *argentea* and *rostrata*. Mr. Witherby also very kindly lent me four breeding males from Portugal and three from the Sierra Nevada in Spain. In addition to these, 38 Egyptian passage migrants in the Giza Zoological Museum, 12 collected by myself in Syria and Palestine, and 19 winter visitors to eastern Africa.

I have not included in the following remarks the races *virago* from Crete, *seebohmi* from Algeria and Morocco, *leucorrhoa* from Greenland, or *phillipsi* (which I believe to be a race of *Œ. œnanthe*) from Somaliland.

Now the races into which the Wheatears under review have been divided are :—

œnanthe from Europe and western Asia generally.
argentea from central Asia.
rostrata from Syria and Palestine.
nivea from southern Spain.

The characters on which these races depend for their separation are the size of the culmen and wing, the degree of colour on the mantle, the extent of white on the forehead, and the colour of the wing-margins in autumn plumage.

The validity of these geographical races seems to depend on the proportion, necessary within a given area, of those individuals which conform to the characters on which the race is based.

As I understand a subspecies, absolute constancy is unnecessary and is indeed rarely seen. But what degree of constancy is required? It must be a matter of opinion, but I will arbitrarily take 75 per cent. as the necessary proportion of birds which agree with the characters which separate the race within a given area.

Among the Wheatears in question I find that considerably less than 75 per cent. have the characters assigned to the various races, and as I believe that some of these characters, such as density of colour on the mantle or amount of white on the forehead, depend more on individual variation (or perhaps age) than on geographical distribution, I am compelled to unite them all under *Œnanthe œnanthe œnanthe*.

Males from Europe.—Wings of males usually between 93 and 98 mm., rarely 99 or 100 mm.; culmen between 16 and 17 mm. Birds from Great Britain average slightly smaller. 10 males from Norway 95–97, 100: 8 from Sweden 93·5–98; 11 from western Russia 91–99. 52 from Macedonia and Greece (teste Stresemann, Avif. Macedon.) vary from 89 to 99 mm. Breeding birds from Greece do not have an unusually pale mantle. Four birds from Portugal have wings 93–98 and culmens 17·5–18 mm. One has a very

pale mantle and white forehead, the remainder being normal. Three birds from the Sierra Nevada in southern Spain have wings 93, 95, and 99 mm. and culmens varying from 18·5 to 19. One has a very pale mantle and white forehead, one has a broad white forehead and normal mantle, whilst the third is in every way normal.

Birds from the Mediterranean islands have longer culmens, usually between 18 and 19 mm.

But in all cases I have seen, the paler the mantle the whiter the forehead, this being particularly noticeable in Witherby's Spanish and Portuguese birds. These pale mantles and white foreheads can be found from Scotland to Spain and from Germany to central Asia and Palestine.

Males from Syria and Palestine.—These have been separated under the name *rostrata* on account of the longer culmen and paler wing-margins in autumn plumage. This latter characteristic I am unable to confirm. Now the wings of Palestine birds vary from 95 to 99 (once 100) and culmens vary from 17 to 19 mm. The mantle and forehead agree with others in similar plumage from Continental Europe.

Males from Turkestan.—These have been described under the name *argentea*, on account of their supposed paler mantles and whiter forehead. Of 13 birds examined, only five can be said to have unusually broad white forehead-bands. Here, again, the palest mantle accompanies the broadest forehead-band. Six of these 13 males are as dark on the mantles as any British specimens and show scarcely any sign of white on the forehead. Wings 95 to 100, average 97·9. Culmen, 17, 18–19, 20.

Males from Egypt (all on passage).—38 examined. Wings 91, 92, 93–100, 101, 103. Culmens 16, 17–19, 20. Eleven have broad white forehead-bands. This series shows some curious facts.

a. The size of the culmen is not in proportion to the size of the wing, birds with the longest wings having nearly always the shortest culmens.

b. Birds with the broadest forehead-bands are on the large size in either wing or culmen, three having wings of 100 mm., and five others have culmens of 19 mm.

c. The paler the mantles the broader the forehead-band, but a broad forehead-band does not necessarily mean a pale mantle.

Males from Tropical East Africa (all in winter quarters).—27 examined. Wings 94–99, 100, 101, 102, and 104. Culmens 18–19·5, 20, 20. Only one has a broad white forehead-band. All mantles are normal.

I conclude therefore that :—

1. The races *nivea*, *rostrata*, and *argentea* are not sufficiently well founded and must become synonyms of *Œnanthe œ. œnanthe*.

2. *Œnanthe œ. œnanthe* in the southern part of its range, in the Mediterranean, Syria, Palestine and Turkestan, tends to have a larger percentage of large-billed, or long-winged, or white-foreheaded, or paler mantled individuals than birds breeding in the west of Europe, but that these characteristics are seldom all present in the same individual, neither are they by any means constant within any definite area. It is however possible that somewhere in Siberia a long-winged, pale foreheaded and mantled bird will be found breeding, and that these characteristics will be constant within a definite area.

3. The only races of *Œnanthe œnanthe* which I therefore recognize are :—

		Wing of males.	Culmen.
œnanthe	Europe and Asia	93–99, rarely to 104.	16–19, rarely 20.
leucorrhoa	Greenland, etc.	102–110	16–18
seebohmi	Algeria and Morocco..	92–98	17–19
virago	Crete	89–95	19–20
phillipsi	Somaliland.....	78–83, 87	16–18

Œnanthe deserti Temm.

At Sollum, on the coast of western Egypt, I collected in January a series of eight birds which prove to be *homochroa* (Tristr.). A male in spring plumage which I shot near the Pyramids proves to be the same form. They were not uncommon there in late March, but appeared to be on passage somewhere, as they were not there throughout the winter nor were they there during April or May.

Birds collected in winter west of Cairo (between Suez and Cairo, where they breed) are *Œ. d. deserti*.

Nicoll (Handlist Birds of Egypt, p. 3) is in error when he says *atrogularis* (=*albifrons* Brandt) occurs within Egyptian limits. In Egypt west of the Delta *homochroa* occurs, and east of the Delta *Œnanthe d. deserti* occurs.

Œnanthe d. atrogularis (rectius *albifrons*) occurs as a winter visitor to the Sudan, Arabia, and Somaliland from November to March, and I can find no record of its occurrence in Egypt. Birds from southern Arabia and northern Somaliland, all winter birds, appear browner and darker than topo-typical specimens, which is probably due to their fresh plumage.

Œnanthe mœsta Licht.

I found this essentially desert-loving Chat quite common in October in the Syrian Desert, 40 miles east of Damascus, and again near Sollum in western Egypt in January.

Its flight differs from that of all other Chats I have seen, in being of a fluttering and very undulating nature. At Sollum in January it was in exquisite song.

Œnanthe lugens lugens Licht.

This bird is quite a common resident in the desert country fringing the Egyptian Delta. It is absent from Siwa Oasis, Sollum, and Mersa Matruh in western Egypt. It also occurs at Suez on both sides of the Canal.

In Palestine very few are resident on the summit of the Judæan highlands, but they are quite common on the lower eastern slopes of the Judæan hills down to below sea-level

in the Jordan Valley. Absent from the western slopes of the Judæan hills.

It again occurs as a sparse resident in the foothills of the Anti-Lebanon west of Damascus. Not noted elsewhere in Palestine.

Seven clutches of 3 to 6 eggs were found near Jericho and Jerusalem from 18. iii. to 19. iv.

Œnanthe leucopyga leucopyga (Brehm).

This bird is a very common resident in Siwa Oasis, where it is most confiding, breeding in houses and mud-walls. Birds were singing in January.

I again found it not uncommon in the deserts east of the Egyptian Delta, confining itself to the most inhospitable ravines. Here it was extremely wild.

It again occurs in the desolate ravines surrounding the Dead Sea. Here I found a nest with two eggs on 30. iv.

In all the above localities birds in all stages, from pure white to pure black heads, were equally common.

SAXICOLA RUBETRA.

Saxicola rubetra rubetra (L.).

Of 21 winter birds from Kenya Colony, 17 are of this typical race and 4 are *spatzi*.

Birds commence to arrive in eastern Africa towards early October, and become fairly common by the end of that month throughout the country from Uganda and the Victoria Nyanza to Nairobi. Between Nairobi and the coast they are not so common. Birds commence leaving for the north in late February and throughout March, my latest record being on 31. iii. at Kisumu on the Victoria Nyanza. Four birds from Somaliland, shot in September, April, and May, belong also to the typical race.

Saxicola rubetra spatzi (Erl.).

Four obtained at the north-east corner of the Victoria Nyanza in March.

SAXICOLA TORQUATA.

It may be useful to review briefly the various geographical races of the Stonechat.

Saxicola torquata leucura.

Pratincola leucura Blyth, Journ. As. Soc. Beng. xvi. 1847 : Sind.

Seven examples examined.

This race is the palest of the group.

Male. Nearest to *maura*, but in fresh autumn plumage with broader and paler edgings to the feathers of the wings and upper parts. Upper tail-coverts unspotted white with a few yellowish margins on the feathers. Tail with even more white than in *maura*, the outer rectrices being white with merely brown tips. Axillaries black with broad white edgings. On the lower parts the chestnut of the breast is paler than in any other race except *stejnegeri*, and is confined to the upper half. Abdomen white. The border line between the chestnut and black on the breast is occasionally intermixed with a few white feathers, and the white patches on the sides of the neck come well forward on the breast.

Female. Upper parts brownish grey and not reddish brown, therein differing from all other forms. Under parts paler than in any other form, throat white, remainder of under parts only slightly tinged with pale chestnut.

Wing of males 66–70, culmen 14 mm.

Occurs in winter in Assam, Burma, Tenasserim, and throughout the north-eastern portion of the Indian Peninsula. It is a straggler to Sind.

Through the kindness of Mr. S. L. Whymper I have obtained the following information about the breeding range of this race :—They do not breed in the Himalaya proper but in the Kumaon Terai and Bhaber, and have not been observed breeding in either the hills or plains of India.

Saxicola torquata indica.

Pratincola indica Blyth, Journ. As. Soc. Beng. xvi. 1847, p. 129 : India.

Pratincola albosuperciliaris Hume, Stray Feathers, i. 1873, p. 307. (Also see Hartert, J. f. O. 1910, p. 174.)

Male. Similar in every respect to *maura*, except that the base of the tail never has more than 11 mm. of white, and the outer tail-feather seldom has any white at all or only a slight patch of one or two millimetres. Upper tail-coverts white with a few yellowish fringes (never spotted with brown as in *rubicola* and *hibernans*). Axillaries black with small white fringes. The whole under surface is suffused with chestnut, paler on the abdomen and to a variable degree of intensity on the breast.

Female. As in *maura*, except for the much larger amount of white at the basal portion of the latter's tail. Throat from almost whitish to pale fulvous. Remainder of under parts dull chestnut.

Wing of males 67–71, culmen 13–14 mm.

Breeds in western Siberia, on the Petchora, in the southern Urals and Tian Shan, scarce round Orenberg, on the Khirgiz Steppes and in Trans-Caspia and western Turkestan. Breeds commonly in the Himalayas from Gilgit and Cashmir to Sikkim, also in the Kurram Valley and at Quetta. Has also been recorded as breeding in the Elburz Mountains of northern Persia.

Winters in Afghanistan and India. Has straggled to the Andamans. Obtained in Norfolk in September 1904, and in Fife in October 1913.

Saxicola torquata stejnegeri.

Pratincola rubicola stejnegeri Parrot, Verh. Orn. Ges. Bayern, viii. 1908, p. 124 : Iterup and Yesso in northern Japan.

Male. Upper parts darker than either *maura* or *indica*, this being especially noticeable in the female. Tail as in *indica*, with little or no white at the base of the outer rectrices. Upper tail-coverts white with broader yellowish edgings than in either *maura* or *indica*. Axillaries as in *maura* and *indica*. Under parts very similar to *indica*, but if anything slightly darker.

Female. As in *indica*, but slightly darker.

Wing of males 67–70, culmen 13·5 to 14·5 mm. The bill is broader and stouter than in *maura* or *indica*.

Breeds in eastern Siberia east of the Lena River and Altai Mountains, in Trans-Baikalia, Ussuri Land, and on the Amur, in Manchuria, northern China, Saghalien, in the Kuriles, and apparently throughout the hills of Japan.

Winters in the Riu Kiu Islands, in southern China, Formosa, Hainan, Burma, Siam, and Assam, being the prevailing winter Stonechat in the latter country. Also in north-east India, where it is scarce.

Saxicola torquata przewalskii.

Pratincola maura var. *przewalskii* Pleske, Wiss. Res. Przewalski's Reisen, Vögel, i. 1889, p. 46 : Kansu and eastern Turkestan.

Similar to *stejnegeri*, but slightly darker underneath and larger. Axillaries with scarcely any white edgings. Wing of males 72–75, culmen 15 mm.

Breeds in Kansu and on the northern slopes of the Russian hills in eastern Turkestan. A fairly common summer visitor to Tibet.

On migration and in winter in China and the eastern parts of the Indian peninsula, also at Gilgit and Kumaon in the Himalayas. Has occurred in Siam.

Saxicola torquata maura.

Motacilla maura Pallas, 1773 : Ural River and between Tobol and Irtysh Rivers.

Saxicola hemprichii Ehrenberg, 1832 : Egypt.

14 examined.

Male. The feather edgings of the upper parts are paler than in *rubicola* or *hibernans*. Upper tail-coverts white with a few yellowish fringes, never with brown spotting as in *rubicola*. The basal half of all the outer rectrices white, the outer web being sometimes entirely white. The chestnut of the under parts is more confined to the breast than in *indica* or *stejnegeri*, and thus it more closely resembles *rubicola*. Abdomen usually white but sometimes washed with pale

chestnut. Axillaries black with much narrower white fringes than in *rubicola* or *hibernans*.

Female. Generally paler above and below than in *indica* or *stejnegeri*, and more as in *rubicola*.

Wing of males 69–77, culmen 13 mm.

Central and southern Urals, where it appears to meet *indica*, Astrachan and northern Caucasus, and in south-west Persia near Shiraz.

Winters in north-east Africa, southern Arabia, Abyssinia, northern Somaliland, the Sudan, and on the Red Sea. A few appear to winter at Basra, at the head of the Persian Gulf. No Palestine record, and is but an occasional straggler to Egypt.

Saxicola torquata rubicola.

Motacilla rubicola Linnæus, Syst. Nat. 12th ed. 1766, p. 332 : Europe.

Male. Upper tail-coverts white with a few dark brown streaks. Base of tail black. Axillaries black with narrow white fringes. Under parts with the chestnut usually confined to the breast; abdomen white, but occasionally birds have the whole lower parts washed with chestnut as in *hibernans*.

Female. Under parts as in *maura* or slightly darker.

Wing of males 64 to 70, culmen 14–15 mm.

Birds from Crete have culmens up to 17 mm. Birds from north-west Africa appear to lose the brown edging to the feathers of the upper parts quicker than others from continental Europe, and therefore in comparing birds of the same dates from these localities, those from north-west Africa appear blacker ; but in fresh autumn plumage there is no difference. (See also Hartert, J. f. O. 1910, p. 173.)

Continental Europe from southern Sweden and Norway, where it is rare. In Germany it is more plentiful in the west than in the north. Very rare in Pomerania. Breeds in Poland, absent from Finland and northern Russia but in central and southern Russia it apparently breeds east to about the Volga Valley. Throughout southern Europe

(except Portugal), where it is confined to the hills. Breeds in Greece, Crete, Sardinia, and Sicily, but apparently not in Cyprus. Also in Morocco, northern Algeria, and northern Tunisia.

A very common winter visitor to Cyprus, Syria, Palestine, and the north coast of Africa from the middle of October to March ; common in the Siwa Oasis in January.

They do not appear to pass far into Africa in winter, and fail to reach the Sudan, where all winter visitors are *maura* (Sclater & Praed, Ibis, 1918, p. 685). They have been obtained in the Yemen in December and January (Novit. Zool. 1917, p. 460). Reichenow records winter birds from Kikuyu, Nandi, and Naivasha to Kenya Colony, but all my specimens from east Africa are *axillaris*.

Saxicola torquata hibernans.

Pratincola t. hibernans Hartert, J. f. O. 1910, p. 173 : Tring, England.

Male. Upper parts in fresh autumn plumage with much broader red fringes than in *rubicola*. In worn plumage these fringes seldom wear off to the extent they do in *rubicola*, with the result that one very rarely finds birds in summer with pure black backs. Upper tail-coverts, base of tail, and axillaries as in *rubicola*. The whole of the under parts are covered with chestnut, abdomen never white as in *rubicola* : the chestnut is usually darker than in *rubicola*.

Female. Generally redder on both upper and under parts than *rubicola*.

Wing of males 66–68, culmen 14 to 15 mm.

Resident in Scotland, Outer Hebrides, Ireland, and Britain. Birds from Oporto (Portugal) appear to belong to this race (Witherby, Bull. B. O. C. xxxix. 1919, p. 48).

Saxicola torquata jebelmarræ.

Saxicola t. jebelmarræ Lynes, Bull. B. O. C. xli. 1920, p. 17 : Jebel Marra, Darfur.

Male. Differs from *maura* in having much darker brown edgings to the feathers of the upper parts, and in having the

base of the tail almost entirely black. Differs from *sibilla* and *axillaris* in having broader brown edgings to the feathers of the upper parts. Upper tail-coverts pure white. Axillaries black with narrow white edgings. The chestnut of the under parts is of a darker tint than that of any Palæarctic form, and is confined to the breast and flanks. Centre of lower breast and abdomen white.

Female. Under parts very similar to *maura* and *sibilla*, but generally paler than *rubicola*.

Wing of males 70–71, culmen 14 mm.

So far only known from the Darfur Hills in the western Sudan.

Saxicola torquata sibilla.

Motacilla sibilla Linn. Syst. Nat. 12th ed. 1766, p. 337 : Madagascar.

Male. Very near *axillaris*, but smaller and with almost pure white axillaries. There is also much less white on the upper tail-coverts than in *axillaris*, the black of the lower back extending on to the rump. Under parts with much more chestnut than in *axillaris* and much less than in *salax*.

Female. Very near *jebelmarræ*.

Wing of males 63–66, culmen 14–15 mm.

Madagascar and Comoro Islands.

On the neighbouring island of Reunion occurs *Saxicola borbonica* (Bory de St. Vincent, 1833), a distinct species with a white eye-stripe, white chin, and a broad massive bill, but otherwise not unlike the *torquata*-group.

Saxicola torquata pallidigula.

Pratincola pallidigula Reichenow, J. f. O. 1892, p. 194 : Cameroon Mountain.

Two examined.

Male. Upper parts very dark, and in worn plumage with an almost steel-black sheen. Upper tail-coverts pure white. Tail black at base or with a millimetre or two of white. Axillaries black narrowly tipped with white. The chestnut of the under parts is as in *axillaris*, but the colour is if anything darker and richer and more like *jebelmarræ*, but the

chestnut is much more confined than in this latter race. Flanks and abdomen white.

Female. Much darker than *salax* and nearest to *albofasciata*. The chestnut on the under parts is confined to the breast, the abdomen and flanks being white. The throat of the female is also darker than in either *salax* or *axillaris*.

Wing of one male 68, culmen 15. Hartert (J. f. O. 1910, p. 176) gives wings as 73 to 82·5 mm.

Cameroon and the hills of Fernando Po.

Saxicola torquata axillaris.

Pratincola axillaris Shelley, Proc. Zool. Soc. London, 1884, p. 556: Kilimanjaro, 7000 ft.

Pratincola emmæ Hartlaub, J. f. O. 1890, p. 152: Ruganda; also Ankole in S.W. Uganda. Type examined.

Male. Differs from *salax* in having black axillaries with very narrow white fringes. Upper tail-coverts pure white. Tail usually entirely black at its base with perhaps occasionally a millimetre or two of white. The chestnut of the under parts is more confined to the breast than in *salax* and is merely a chestnut spot below the black throat, which is sometimes so confined as to be almost lacking, thus forming a link between the chestnut-breasted forms and *albofasciata*. Rest of under parts pure white.

Female. As in *salax*.

Wing of males 68–73, culmen 14–15 mm.

Inhabits the whole of Uganda and the Belgian Congo immediately west of Lake Tanganyika, Lake Kivu, Kenya Colony round Kisumu, Nakuru, Naivasha, Kikuyu, Nairobi, and Kilimanjaro. In the Nandi country (north-east of the Victoria Nyanza) birds appear to approach *albofasciata*.

Saxicola torquata albofasciata.

Saxicola albofasciata Rüppell, Syst. Ueb. 1845, p. 39: Simen Province, Abyssinian highlands.

Male. Whole upper parts as in *axillaris* and *salax*. Upper tail-coverts white. Axillaries entirely black. Tail entirely black, with occasionally a small white spot at the base of the

central rectrices. Under parts completely lacking the chestnut below the black throat, but the lower edge of this black is frequently fringed with chestnut tips to the black feathers. Abdomen, flanks, and lower breast white.

Female. Very dark as in *pallidigula*, and much darker than *axillaris* or *salax*.

Wing of males 66–75, culmen 14–15 mm.

The highlands of Abyssinia. It will be interesting to see to which race belong birds from Mount Elgon.

Saxicola torquata salax.

Pratincola salax Verreaux, Rev. et Mag. Zool. 1851, p. 307 : Gaboon, West Africa.

Specimens from the type locality not examined.

Male. Upper parts very dark with only slight brown edgings to the feathers, which appear to wear off very quickly and leave a jet-black crown and back. Upper tail-coverts pure white. Axillaries smoky-brown with broad white margins. Tail from pure black at base to a varying amount of white, sometimes as much as occurs in *maura*. The chestnut of the under parts extends much lower than in *axillaris* and frequently reaches the flanks as in *robusta*, but on the whole it is a much whiter bird below than this latter race.

Female. Above almost as dark as *pallidigula* and much darker than *jebelmarræ* or *robusta*. Under parts darker than *jebelmarræ*, and not unlike *robusta* but with a darker throat. The whole of the chestnut of the under parts is uniform on breast and abdomen, whereas in *axillaris*, *jebelmarræ*, *pallidigula*, and *sibilla* the chestnut of the breast is of a darker tint than that of the abdomen.

Wing of males 64–71 mm., culmen 14.

Gaboon and northern Angola.

Saxicola torquata torquata.

Muscicapa torquata Linn. Syst. Nat. 12th ed. 1766, p. 328 : Cape of Good Hope.

Male. The chestnut on the under parts only covers to about half-way between the black of the throat and the vent, and does not extend to the flanks.

Female. Chin and throat white in contrast to the rufous breast. Under parts pale chestnut, with a white patch in the centre of the abdomen.

The neighbourhood of Cape Town and Namaqualand.

Saxicola torquata robusta.

Pratincola robusta Tristram, Ibis, 1870, p. 497 : "Mysore" in error. I cite terra typica as Natal.

Pratincola t. orientalis Sclater, Ibis, 1911, p. 409 : Umfolosi, Zululand.

Male. Upper parts as in *salax*. The chestnut on the breast extends over the flanks and leaves a small indistinct patch of white in the centre of the abdomen. Axillaries black broadly fringed with white.

Female. The whole of the under parts are uniform pale chestnut with no white patch on the abdomen and closely resemble the under parts of *salax*. Throat not so dark as in *salax*, but not whitish as in *torquata*.

Southern and eastern Cape Colony, Knysna, Port Elizabeth, Pondoland, Natal, Zululand, Transvaal, Lake Ngami in Bechuanaland, Mashonaland, southern Angola and Nyasaland to the north end of Lake Nyasa.

Wing of 18 ♂ ♂ 68–75, culmen 14–14·5 mm.

I have examined the type of *Pratincola robusta*. The bird is an adult male in worn plumage. On the original label is "Mysore." Tristram's description is misleading, as the abdomen is white and not red (Tristram says "*abdomine rufo nec albido*"). The specimen most closely resembles *orientalis* but is slightly larger, having a wing of 76 mm. and a culmen of 15·5 mm.

The bird is far removed from any palæarctic race, as was realized by Oates (Fauna Brit. India, ii. p. 58), who also examined the type of Tristram's *robusta* and thought it identical with the larger (*sic*) Bush-Chat of Madagascar, in which opinion Sharpe and Tristram concurred. Oates goes on to say that there are two Bush-Chats in Madagascar, agreeing in coloration but differing in size. This is again most confusing, for in the first place there is only one Bush-

Chat (*Pratincola*) in Madagascar, namely *sibilla*, and in the second place Tristram's *robusta* does not agree with *sibilla*, in which race the chestnut is confined to the chest and never extends to the flanks. In Tristram's type the chestnut extends to the flanks as in *orientalis*. I am therefore compelled to accept *robusta* as the oldest name for this race, and am convinced that the specimen (collected by H. E. Fox) never came from Mysore at all but from South Africa.

Tristram also made a second type of *robusta*, to which he also refers ('Ibis,' *ibid.*). This is undoubtedly a male *przewalskii* in fresh autumn plumage, but cannot in any sense be admitted as a type, as the "Mysore" bird is the one described.

Hartert, in his review of the genus *Pratincola* (J. f. O. 1910), accepts Oates' opinion of *robusta*, but he had not then seen the type.

PHŒNICURUS PHŒNICURUS.

Phœnicurus p. phœnicurus (L.).

Common on autumn passage in October at Damascus, and during November in Jerusalem.

In western Egypt, a few were seen at Mersa Matruh in January. Spring passage in the Egyptian Delta in 1920 occurred between 20. iii. and 18. iv.

Phœnicurus p. mesoleuca (Hemp. & Ehr.).

Common on autumn passage at Damascus in late September.

PHŒNICURUS OCHRUROS.

Phœnicurus ochruros ochruros (Gmel.).

A not uncommon winter visitor to Palestine, where I obtained birds at Jericho on 22. ii., at Jerusalem on 21. xi., and saw others at Jericho in October.

Phœnicurus ochruros gibraltariensis (Gmel.).

The commonest winter Redstart to Palestine, the latest spring record being on the Sea of Galilee on 9. iii. Also a not uncommon winter visitor to Egypt and the Egyptian Coast west to Sollum, where I saw several birds in late January.

Phœnicurus ochruros semirufa (Hemp. & Ehr.).

I obtained a male at Jerusalem on 24. xi. and saw another on the Sea of Galilee on 9. iii. Doubtless a few wander south during winter. The type came from Egypt, whence it has not since been obtained.

Luscinia megarhynchos africana Fisch. & Reichw.

One obtained in the Taita Hills near Voi in Kenya Colony in December. In addition to this specimen other winter birds are known from near Kilimanjaro, southern Arabia, and N. Somaliland.

In all there are 13 Nightingales in my African collection, all the others being *Luscinia luscinia*.

Brig.-Gen. Clarke found a Nightingale breeding commonly at Aleppo in 1919, and thought it was *Luscinia m. golzi*. I have not seen any Aleppo specimens. Weigold (J. f. O. 1913, p. 2) records both *golzi* and *africana* as stragglers to Urfa in north-west Mesopotamia and not far from Aleppo, and he also records *L. m. megarhynchos* as possibly breeding at Aleppo, having obtained them in spring up to early May. It seems probable that Clarke's birds were also of the typical race.

HIRUNDO RUSTICA.

Hirundo rustica rustica L.

I am only dealing with the migration of the Swallow in the Near East and eastern Africa.

Breeds in Armenia, Asia Minor, Crete and Cyprus, though in the latter country birds are said to intergrade (*sic*) with *savignii* (Bucknill, Ibis, 1910, p. 2).

They were common at Damascus on 8. ix., at Baalbek on 10. ix., and at the south end of the Sea of Galilee on 7. ix., but I cannot say whether they had bred there or whether they were early migrants. They are said to interbreed with *transitiva* in the Galilee District. I found no old nests. But Swallows flood the whole of Syria and Palestine from early September to the end of October, and I noted flocks passing south at Jericho on 19. x. and as late as 27. xi. I doubt if any birds winter in Palestine.

In Armenia the passage of northern migrants occurs from the middle of August to the middle or end of October. Birds commence arriving in Egypt in early September and passage continues till early October; none winter in the Egyptian Delta, but I saw a small flock at Siwa Oasis on 26. i.

Most birds have left Cyprus by the middle of October.

Birds commence arriving in Abyssinia from early September, and large flocks were seen crossing the Red Sea just north of Port Sudan on 2. x. A few winter in Abyssinia. Both adults and birds of the year arrive in Somaliland towards the end of September.

I have no records of the autumn arrival of Swallows in the Sudan, though many appear to winter there.

In tropical eastern Africa my first autumn record is on 30. ix., and they become numerous by 3. x., birds still passing south throughout the month. My latest record of southern passage is on 1. xi. near Mombasa, when large flocks passed throughout the afternoon.

Birds commence arriving at Bulawayo in Rhodesia in the middle of October, and at Beira on the coast of Portuguese East Africa about 17. x.

Birds have been obtained in southern Arabia on 17. x.

The Swallow is abundant in the Transvaal, Natal, and Cape Colony from November to February. Those wintering in Natal do not move north again till early April. It is noteworthy that all British "ringed" Swallows have occurred in Natal and not elsewhere in South Africa. Are these the birds which leave in early April?

My first African record of spring passage is on the Serengeti Plains between Nairobi and the coast, from 31. i. to 2. ii., when a continual passage north was noted from dawn to 10 A.M. each day. On 7. ii. and 21. ii. parties were noted moving north in Rhodesia, and a few arrived in north-west Arabia as early as 16. ii.

In Cyprus, probably the most southerly breeding limit of this Swallow in the Near East, they arrive abundantly in the third week in February, and breed in the

middle of March, when others are still wintering in Natal.

During the first few days of March birds commence arriving in Palestine. They were common at Halfa and on the Sea of Galilee on 4. iii.; and on the same date I have seen thousands passing north over the Athi Plains in Kenya Colony.

The bulk of winter visitors to Rhodesia leave for the north about 12. iii., a few remaining till 28. iv., whilst birds have been obtained at Beira on 15. iv.

Winter visitors to the Sudan leave about the middle of March, a late record being on 17 . v. at Khartoum, whilst my last spring record for Kenya Colony is on 30. iii. at Kisumu on the Victoria Nyanza. But at Old Moshi on Kilimanjaro in early June a pair of birds put in an appearance and actually roosted in my office. As they showed no inclination to breed I secured both birds, male and female, and their organs showed that they neither had nor intended to breed that summer.

In Sinai first spring arrivals have been noted at Akaba on 6. iv. and were still passing till 30. iv. Northern passage over the Red Sea has been observed on 20. iv. and 23. iv., whilst Swallows are reported common at Port Sudan throughout May.

Spring passage in Egypt occurs from about 11. iv. to 1. v., and was at its height between 14. iv. and 18. iv. in 1920. Birds are seldom seen on spring passage before 5. iv., though late migrants can be seen at Suez and Cairo till 20. v. Northern passage has been observed at sea off Alexandria from 4 v. to 7. v.

Besides the earlier arrivals to Palestine noted above, I saw strong passages of north-bound Swallows at Jericho from 29. iv. to 2. v. and at Jerusalem on 1. v.

Birds commence arriving in Crete on 25. iii. and were still on passage on 29. iv.

In Armenia they are common on passage from the end of April to early May.

Hirundo rustica transitiva Hartert.

This race is by no means easy to distinguish from individuals of the typical race which have red under parts, but the latter is never quite so dark underneath and the under tail-coverts—the best guide—are invariably darker in *transitiva*.

This race breeds in a very confined area, namely at Afule in the Plain of Esdraelon, at Acre and Haifa, and in the coastal Plain of Palestine south to Gaza, but apparently not in the Judæan highlands or Jordan Valley. In the Galilee district it begins to meet and interbreed with the typical race. I saw a few Swallows at Aleppo on 10. ix. which appeared to be of this race, but no examples were obtained.

I am convinced that this race is a partial migrant, for (Ibis, 1920, p. 230) I have seen them on passage in the autumn going south-west from Gaza. I have now obtained an undoubted bird from Cairo on 21. xii., and there is another in the Tring collection obtained in Uganda in February. In the 'Auk' (1915, p. 283) a bird assigned to this race was recorded by Phillips from Sinai on 13. iv. The Palestine Swallow, being a very small community among the hosts of other swallows which visit Africa every winter, might easily be overlooked.

It is noteworthy that Schmitz (Orn. Monatsb. 1921, p. 13) records them as only summer visitors to the Sea of Galilee.

Hirundo rustica savignii Stephens.

The breeding race of the Egyptian Delta, Suez, and the Suez Canal. Zedlitz (J. f. O. 1912, p. 360) records it from El Tor in Sinai in January, April, and May. In the spring of 1920 I found no Swallows breeding at Alexandria.

The wing measurements of the above three races are :—

rustica.	♂♂ and ♀♀	118–127 mm.
transitiva.	„ „	111–126 mm.
savignii.	„ „	111–123 mm.

Riparia obsoleta (Cab.).

I have examined fourteen specimens from Egypt, obtained at all seasons of the year. In colour they are distinctly paler

than a series of twelve from eastern Persia and Baluchistan, with one exception, a bird from Helouan which I obtained in February, which is as dark as any from eastern Persia. But my other birds from Helouan are all pale.

Birds from Palestine are somewhat intermediate in colour between Egyptian and eastern Persian birds.

Two birds collected by Witherby from south-west Persia are very pale, and appear to be in worn plumage, but are no paler than March birds from Egypt.

Zedlitz (J. f. O. 1910, p. 786) recognizes *Riparia o. obsoleta* (Cab.) from Persia, the hills of Palestine and northern Arabia, Sinai, and the Egyptian hills; *R. o. reichenowi* Zedl. from the desert regions of Egypt and east to Palestine; *R. o. arabica* Reichw. from southern Arabia, and *R. o. rufigula* from southern Abyssinia and eastern Africa.

Hartert (Vög. pal. Faun. p. 816) unites birds from eastern Persia, Palestine, Arabia, and Egypt under *R. o. obsoleta*.

I am, however, inclined to think there is a pale race in the desert regions of Palestine, northern Arabia, and Egypt, and that this race must be called *R. o. obsoleta*, and that the name *pallida* of Hume must apply to Baluchistan and eastern Persian birds.

Birds from Aden, north Somaliland, and Socotra are darker than Egyptian or Sinai birds and are probably *arabica*, but I have not examined topo-typical specimens.

The wings of	11	birds from	E. Persia	measure 117–123 mm.
„	16	„	Egypt	measure 114–121 mm.
„	4	„	Palestine	measure 117–122 mm.
„	2	„	N. Somaliland	measure 113–115 mm.

Zedlitz gives the wings of four birds from Suez as 114–119 mm.

Apus melba (L.).

I have recently collected a series of ten Alpine Swifts from Palestine and Crete. They are all of a paler and greyer colour above than those breeding elsewhere in southern Europe and the Himalayas. They agree more with breeding birds from northern Africa which have been separated by

Tschusi (Orn. Jahrb. xv. 1904, p. 123) as *Apus melba tuneti* from Tunisia. But I should like to see more breeding birds from Tunisia and Algeria before agreeing to this separation.

Then arises the question as to which race the name of *melba* applies. Linnæus named the bird after a figure by Edwards (Plate 27) of a bird from Gibraltar. The colour of this bird is particularly dark, even darker than most birds from southern Europe, and I consider the name *melba* must therefore apply to the southern European race. I have not examined breeding birds from Gibraltar, which may belong to either the typical race or *tuneti* from northern Africa.

If *tuneti* is separable, then the name would appear to apply to birds breeding in northern Africa, Somaliland, Arabia, Crete, Palestine, and east to Persia, but not to Baluchistan and Himalayan birds. Birds from southern India and Ceylon appear to be even darker than others from southern Europe and the Himalayas, and may need separation. Blanford (Fauna Brit. India) states they perhaps breed in Ceylon. I have seen large breeding colonies on the eastern escarpment of the Nilgiri Hills, but failed to collect specimens.

But a female in the British Museum collected at Deesa in Central India on 1 October, 1875, is as pale as others from Somaliland, Algeria, etc.; whilst a bird from Ceylon in the Tring collection is particularly dark.

An examination of the series in the British Museum, comprising birds from southern Europe, Himalayas, Palestine, Crete, south India, and Ceylon shows that individual variation is great, and without a series of breeding birds from the various localities, it is impossible to say whether there really exists more than one race in southern Europe, Asia, northern Africa, Arabia and Somaliland.

APUS APUS.

The Swifts of this group have been sorely mutilated by modern ornithologists, more especially those races which occur in the Ethiopian Region. Any slight individual

variation seems to have been an excuse for subspecific separation. Perhaps in thinking I am assisting in disentangling the apian knot, I have still further confused the issue, but I believe I am correct in my deductions. Like bishops, Swifts are always interesting, but sometimes disappointing.

Apus apus apus (L.).

Cypselus aterrimus Heuglin, J. f. O. 1861 : Abyssinia.

Cypselus balstoni Bartlett, P. Z. S. 1879 : Madagascar.

Apus a. kollibayi Tschusi, Orn. Jahrb. 1902 : Dalmatia.

Apus a. carlo Kollibay, J. f. O. 1905 : Tunis.

Back dark sooty-black, with an oily-green sheen, which in a dull light shows almost blue. Some birds, especially in summer, almost lack any blue or green sheen and appear brownish. Primaries black with a steel-blue sheen on the outer web, and an oily-green sheen on the inner web. Head sooty-brown, the forehead with occasionally some paler edgings to the feathers. Chin greyish white to almost pure white, with or without darker shaft-stripes.

Wing of males usually between 170 and 180 mm., and of females between 164 and 176 mm.

The differences assigned to *kollibayi* and *carlo* are not constant within their supposed breeding areas, and their supposed characteristics occur regularly within the range of both British and northern European Swifts.

The typical race of the Swift breeds in Europe east at least to southern Russia (Sarepta), Macedonia (Monastir), Bulgaria and Serbia, Italy and Crete. Also in Morocco, Algeria, and Tunisia.

In winter it occurs regularly throughout Africa south to the Cape and Madagascar. I shot three birds at Korogwe in Tanganyika Territory on 3. ix. from a large flock passing south.

Apus apus pekinensis (Swinh.).

Cypselus pekinensis Swinhoe, P. Z. S. 1870 : Pekin.

Apus apus marwitzi Reichw. Orn. Monatsb. 1906 : Wembere Plains in central Tanganyika Territory.

Apus a. kalaharicus Reichw. Orn. Monatsb. 1906 : Kalahari Desert, South Africa.

Upper parts paler and browner than in *A. a. apus*, frequently almost lacking the dark patch in the centre of the back. Head paler, especially on the forehead, the feathers often having paler fringes. Primaries and tail as in *A. a. apus*, but usually paler. In worn plumage birds become much browner, losing most of the blue and green gloss on the back. The white on the chin is frequently purer and reaches further down the throat than in *A. a. apus*. Shaft-stripes on the chin-feathers are less frequent than in *A. a. apus*.

Wing of males 165 to 180 mm., and of females 163 to 177 mm., once 180 mm.

Some breeding birds from Palestine appear to approach the typical race, but the majority are pure *pekinensis*. The race *marwitzi*, having been described from a winter bird, has no typical breeding locality. All so-called *marwitzi* which I have examined are indistinguishable from birds breeding at Pekin, in Persia and Baluchistan. As always happens, we find intermediate birds where the races *A. a. apus* and *A. a. pekinensis* meet, but no such intermediate forms are constant in any area from which I have examined birds ; I therefore prefer to treat *marwitzi* as a synonym of *pekinensis*.

This Swift breeds throughout northern Asia, at Quetta in Baluchistan, in eastern Persia, Caucasus, Armenia, Asia Minor, Palestine and Syria, and Cyprus. It has been obtained on passage at Gondokoro (southern Sudan) on 23.iii., in Egypt on 29.iv., and there is a female in my collection from the Victoria Nyanza shot on 2.iii., and one obtained by Archer in northern Somaliland on 15.ix.

Birds winter in India and Africa south to the Transvaal and Kalahari Desert. Perhaps a few winter in Palestine, for I saw some near Jericho in late February.

Palestine breeding birds arrive in the coastal area during the first few days of March, and at Jerusalem in the first few days of April. There are large breeding colonies at Jerusalem, Hebron, Nazareth, Tiberias, Nablus, and Jenin. First eggs laid at Jerusalem on 5.v.

Apus apus barbatus (Scl.).

In P. Z. S. 1865, p. 599, Dr. P. L. Sclater refers to two birds in the Leyden Museum which were obtained in South Africa, as being paler above than *A. a. apus*, particularly on the secondaries and scapulars. He assigns to them Temminck's MS. name "*barbatus*." He states that similar birds occur in Natal. Reichenow (Vög. Afr.) gives wing-measurements as from 170 to 185 mm.

There are three birds in the Tring collection from:

Newcastle (Natal) on 6 . xii.	Wing 195.
Natal (no date).	Wing 189.
No locality or date.	Wing 185.

And in the British Museum from:

Knysna, Cape Colony, Feb.; Cape Town, Nov.;
S.E. Transvaal, April; N.E. Transvaal, Nov.;
with wings varying from 174–185 mm.

These birds closely resemble *pekinensis* except that the under parts have more distinct paler fringes to the feathers, and the Newcastle bird shows very little white on the chin. The shaft-stripes on the chin-feathers are usually very distinct.

It seems probable that this is a South African resident race of *Apus apus*, though I can find no actual record of its breeding there. When I was in the Drakensberg in Natal and Basutoland in 1909, I frequently saw Swifts during the northern summer, but never found them breeding.

Cape Colony, Transvaal, and Natal.

Apus apus sladeniæ (Ogilvie-Grant).

Cypselus sladeniæ Ogilvie-Grant, Bull. B. O. C. xiv. 1904, p. 56: Fernando Po.

(Original description.) "Most nearly allied to *barbatus*, but general colour of upper parts darker, sooty-black in the interscapulary region; throat dusky with little or no trace of whitish. In *barbatus* the throat is white with very distinct shaft-stripes. Wing 185 mm."

Two specimens in the Tring collection from Fernando Po in January agree with this description and have wings of 175 and 178 mm., both being males.

This race differs from *A. a. apus* in its much darker (sooty-blue-black) mantle, and in having the chin sooty-whitish with no trace of anything approaching pure white. The feathers of the under parts seem to be always fringed with a paler colour.

Apus apus melanonotus Reichw.

Apus melanonotus Reichenow, Orn. Monatsb. 1907, p. 60 : Cameroon.

(Original description.) "Back generally deep black, somewhat duller on the neck and sides of the head. Forehead brown-black with scale-like edgings to the feathers ; rump black with a few narrow white edgings. Tail, upper tail-coverts, and wings black with a slight gloss. Upper wing-coverts dark brown, centre of throat greyish brown, chin whitish. Feathers of the under parts and under tail-coverts black with narrow white fringes. Wing 170 mm."

I have not examined specimens of this race. It may or may not be synonymous with *sladeniæ*.

Apus apus shelleyi (Salvad.).

Cypselus shelleyi Salvadori, Ann. Genova, 1888, p. 227 : Shoa, Abyssinia.

Apus roehli Reichw. Orn. Monatsb. 1906, p. 172 : Usambara, between Kilimanjaro and the Coast.

Apus nakuruensis Van Someren, Bull. B. O. C. xl. 1919, p. 58 : Lake Nakuru in Kenya Colony.

Salvadori's original description of *shelleyi* is as follows :— "Similar to *Apus apus* but smaller, with grey secondaries, the wings and tail having a greenish sheen. Generally of a slightly glossy sooty-black with a blackish back. Throat whitish grey. Primaries black with a slight greenish sheen, secondaries greyish umber. Tail dark with a greenish tinge. Wing 157 mm."

Reichenow (Vög. Afr.) gives the wing as 155 mm.

Reichenow's original description of *roehli* reads as follows :—"Differs from *Apus apus apus* in having the upper back nearly black, some feathers with black tips. Lower

parts black-brown, usually darker on the head, rump, and wings. The white throat-feathers have dark shaft-stripes. Wing 160 mm."

Van Someren's original description of *nakuruensis* reads as follows :—" Less greenish-black and smaller than *A. a. apus*. Whole upper side glossy blackish-brown, slightly darker on the mantle. Lores blackish. The whole of the underside, except the throat which is whitish, black. Primaries and primary-coverts blackish with a greyish tinge. Secondary-coverts paler, scapulars blackish. Wing 155 to 165 mm."

Now in examining these three descriptions there is really very little difference in them in either colour or size.

I have also examined Van Someren's type of *nakuruensis* and a co-type of *roehli* obtained in Usambara, the type-locality. The birds are very near, except that in *nakuruensis* the head of the specimen is pressed back into the body and shows little white on the throat, whereas in the co-type of *roehli* the head and neck are fully stretched and the white throat extends a long way. The centre of the back in the co-type of *roehli* has slightly more bluish-black than in Van Someren's type of *nakuruensis*. The wing of the co-type of *roehli* is 165 mm., and of the type of *nakuruensis* 158 mm.

There is another important point. *A. a. shelleyi* is not a brownish bird, except in worn plumage. This is clear from the original description. These pale brown birds of equal size to *shelleyi* are a race of *murinus* described from Somaliland as *somalicus* by Stephenson Clarke (Bull. B. O. C. xl. 1919, p. 49). The fact that *shelleyi* has been considered a pale brown bird appears to have originated in two skins in the Tring collection, which were obtained, one in Kavirondo on the Victoria Nyanza and one at Lake Nakuru. Both are labelled *shelleyi*, and both are very worn and just commencing to moult. But they are probably *A. murinus somalicus*.

I also understand that Van Someren found *shelleyi*, *roehli*, and *nakuruensis* all breeding in the same colony at Lake

Nakuru. Some birds I obtained at Nakuru in 1916 could certainly be assigned to either of the above races on their original descriptions, and I have no hesitation in placing *roehli* and *nakuruensis* as synonyms of *shelleyi*.

Apus a. shelleyi is a small edition of *A. a. pekinensis*. In fresh plumage the head and upper parts are as in *pekinensis*, but with slightly less sheen on the mantle. The centre of the back is more or less suffused with dark blackish-blue, which almost entirely wears off as the season advances. Scapulars much paler brown than in either *A. a. apus* or *pekinensis*. Primaries black with a bluish gloss on the outer web and an oily-green gloss on the inner web. Under parts and lower back with frequently paler scale-like fringes. Throat and chin white to dusky-white, the feathers always having darker shaft-stripes. Generally a much smaller bird than either of the preceding races.

I have examined the following birds :—

Sex.	*Locality.*	*Date.*	*Wing.*
♂	Nakuru	26. xii.	155
♂	Naivasha	20. x.	151
♂	Nakuru	14. v.	158 (type of *nakuruensis*).
♂	Nakuru	20. xi.	151
♂	Kavirondo	12. iii.	146
♀	Nakuru	20. xii.	154
♀	Nakuru	26. xii.	159
?	Usambara	?	165 (co-type of *roehli*).
♀	Nakuru	26. viii.	154
♂ ♂ ♂	Abyssinia	– iv. & – v.	148, 158, 161
♀	Abyssinia	?	148
♂	Naivasha	– v.	160
♀ ♀	Kikuyu, Kenya Col.	?	150, 154
♂	Kenya Colony	– iv.	150

This race apparently inhabits Abyssinia, and occurs at Naivasha, Kikuyu, Nakuru and Kavirondo, in Kenya Colony, and in the Usambara Hills between Kilimanjaro and the coast.

A Swift in the British Museum from Zomba in Nyasaland probably constitutes a further race of *Apus apus*, having a wing measurement of but 141 mm.

Apus apus toulsoni (Bocage).

Cypselus toulsoni Bocage, Jorn. Sciencias Lisboa, 1870, p. 339 : Loanda.

(Original description.) "Smaller than *A. a. apus*. Head and neck sooty-brown, forehead paler and throat whitish. Rump, upper tail-coverts, wings and tail sooty-brown with a slight greenish sheen. Inter-scapulary region, back and lower parts steel-black."

Reichenow (Vög. Afr.) gives wings as 152 to 154 mm. A specimen from Loanda, in the Tring collection, has a wing of 152 mm. Another from the Lower Congo, and now in the British Museum, has a wing also of 152 mm.

So this race is as small as *shelleyi*, from which it differs in its dark steel-blue mantle, much darker wings and wing-coverts, and darker tail and upper tail-coverts. The under parts are also much darker than in *shelleyi*.

Besides being at once distinguished from *A. a. apus* and *pekinensis* on size alone, the mantle of *toulsoni* is both darker and bluer than either of the two former races.

Cypselus niansæ Reichenow (J. f. O. 1887, p. 61), from Kagehi (S.W. of the Victoria Nyanza), is said to only differ from *Cypselus rüppelli* of von Heuglin (Orn. N.O.-Afr.) by its smaller size, wing 150 mm. Now *Cypselus rüppelli* is the same as *Apus æquatorialis* (v. Müller), a distinct species and nothing to do with the *Apus apus*-group.

Apus kittenbergeri Madarasz (Arch. Zool. 1910, p. 77), described from Ngare Dowash near Shirati on the south-east shores of the Victoria Nyanza, is said to connect the *æquatorialis*-group with the *Apus apus*-group. Original description—"Back black with brownish sheen. Lores black. Throat greyish-white, lower throat grey-black with spots or bars. Under tail-coverts with whitish edgings. Wing 175 to 180 mm." The bird in any case does not appear to belong to the *Apus apus*-group.

If it were not for the fact that Rothschild and Hartert had found *Apus murinus brehmorum* breeding alongside *Apus apus apus* in Algeria, the *murinus*-group could only be

considered as geographical races of the *apus*-group. The *murinus*-group are sometimes difficult to distinguish from worn specimens of *Apus a. pekinensis*, but can always be distinguished by having no trace of darker colour on the mantle, whereas no matter how worn *A. a. pekinensis* becomes, it always retains some trace of the dark mantle.

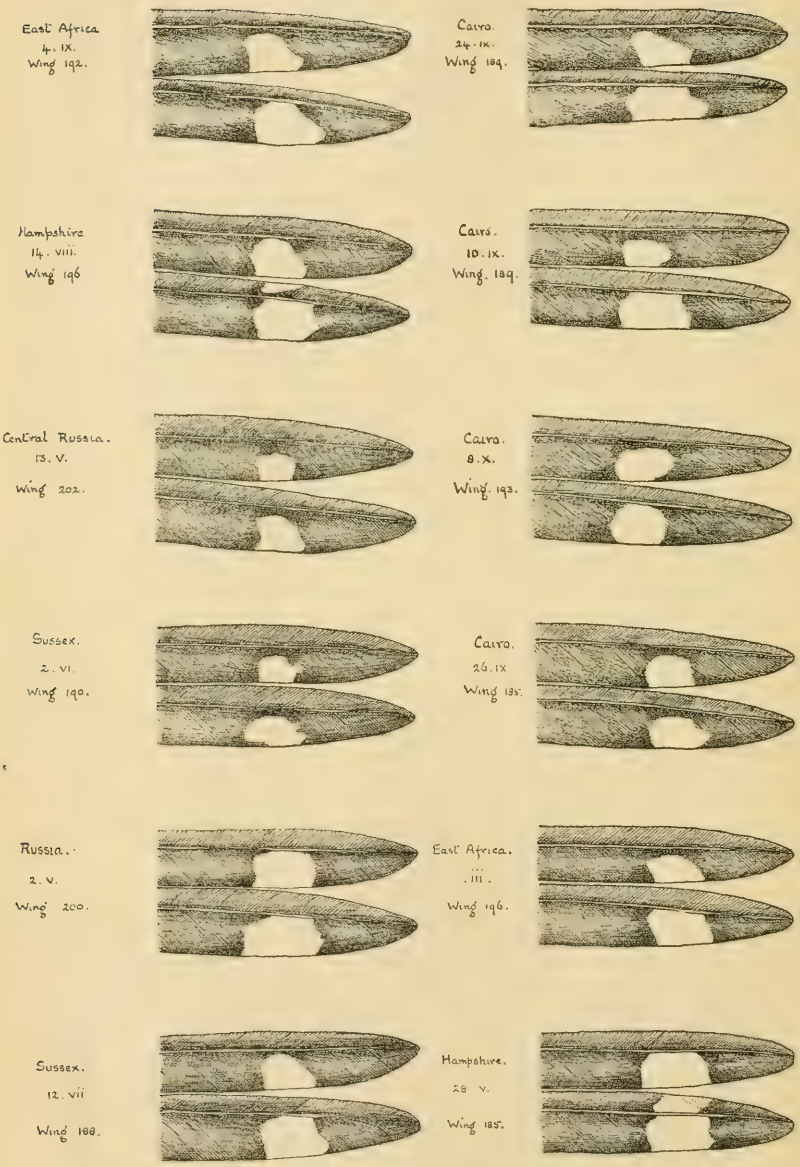
CAPRIMULGUS EUROPÆUS.

The Nightjars of the Mediterranean and Black Sea region have been separated as *meridionalis* on account of their smaller size and their usually paler and brighter plumage. I find that such birds can only be separated on size, and that on colour only about 60 per cent. have a paler plumage, whilst about 30 per cent. of northern and central European birds (*C. e. europæus*) have as pale a plumage as *meridionalis*. I cannot, therefore, regard the supposed paleness of *meridionalis* as any more than of occasional assistance. Size is however a good guide, the wing of males of *C. e. europæus* varying from 189 to 204 mm., and the males of *meridionalis* varying from 174 to 189 mm. This seems constant.

I also find that whereas the white on the second primary very rarely extends to the outer web in *C. e. europæus*, it does so not infrequently in *meridionalis*. The type, a July bird from Greece, has a considerable amount of white on the outer web, and so have others I have examined from Greece and Algeria.

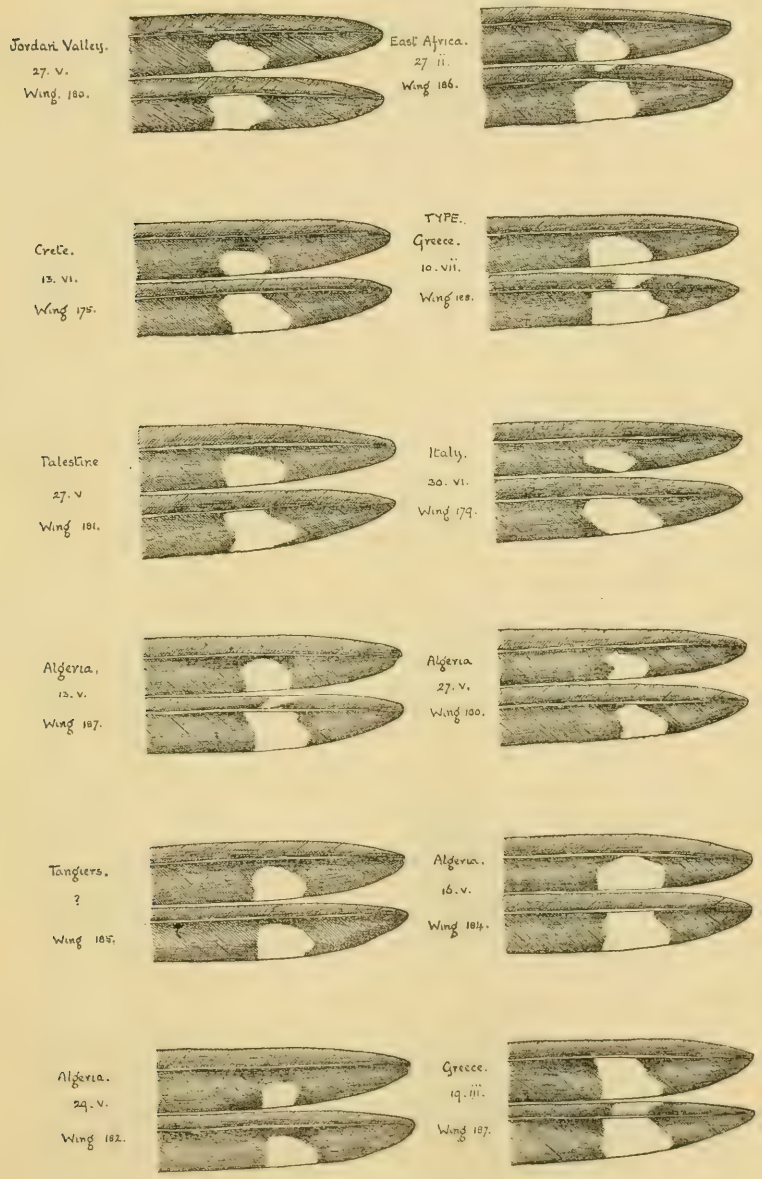
C. zarudnyi is said to have the white on the first and second primaries as in *unwini*, but with the plumage colour of *C. e. europæus*. I have only seen ten birds which agree with these characteristics, namely, one from the Persian Gulf and one (?) from the Transvaal, in the Tring collection, two shot by Nicoll in Cairo, two which I collected in Palestine, and four from Central Asia in the British Museum. Are they merely *C. e. europæus* or *meridionalis* showing a large amount of white on the wing, or are they really a good race?

Text-figure 4.



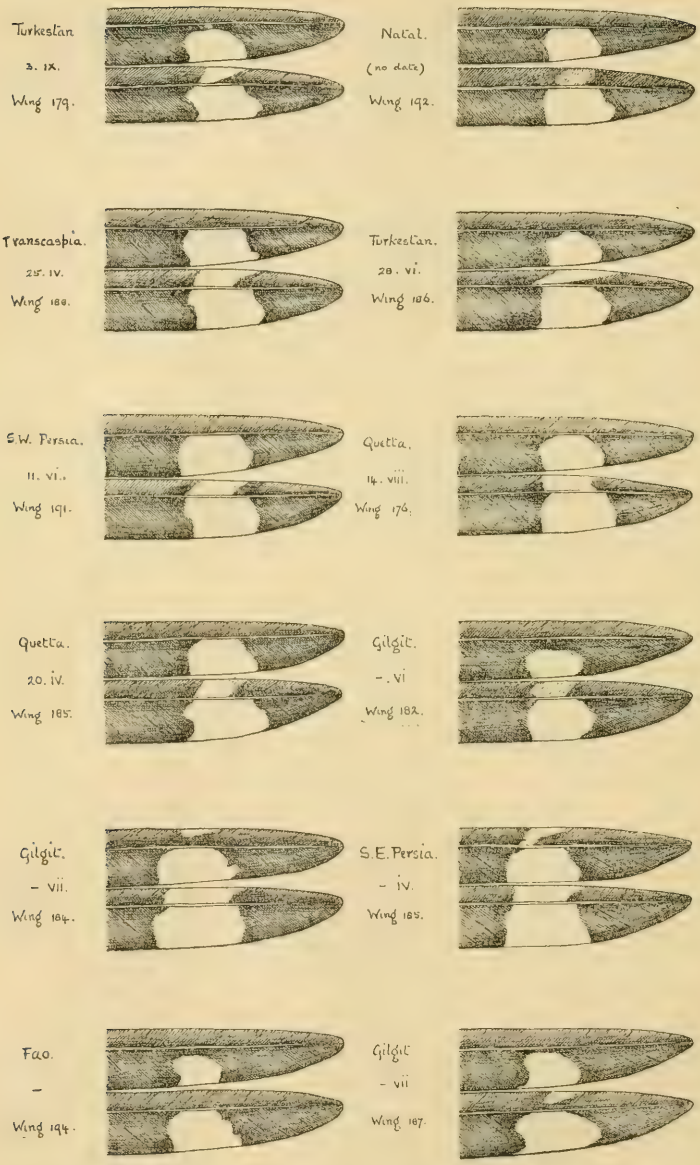
Variation in the wing-spot on the first and second primaries of *Caprimulgus europæus europæus.*

Text-figure 5.



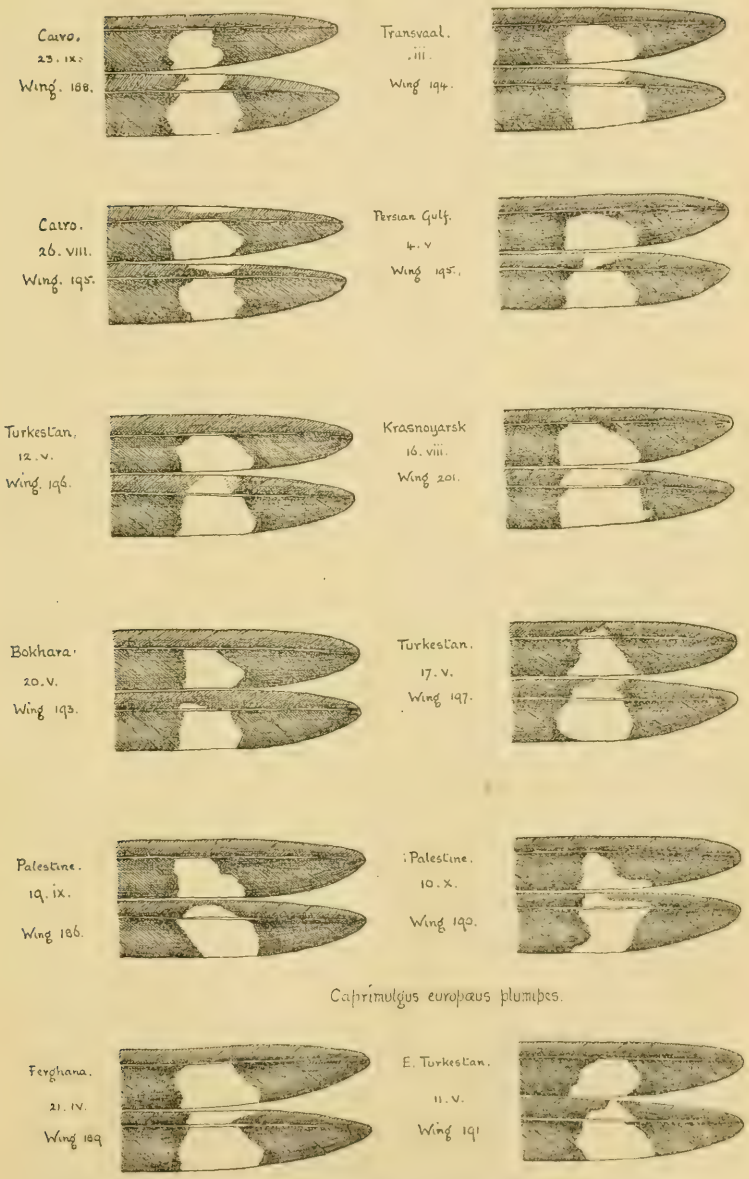
Variation in the wing-spot on the first and second primaries of *Caprimulgus europæus meridionalis.*

Text-figure 6.



Variation in the wing-spot on the first and second primaries of *Caprimulgus europæus unwini.*

Text-figure 7.



Variation in the wing-spot on the first and second primaries of *Caprimulgus europæus zarudnyi* and *C. e. plumipes.*

C. unwini nearly always has white on the outer web of the second primary, but not always. A male from Natal, which on colour must be assigned to *unwini*, has a yellow patch with a minute white core on the outer web, and nothing more. But *unwini* can always be distinguished from other races by its much paler coloration.

Both *zarudnyi* and *unwini* appear to be intermediate in size between *C. e. europæus* and *meridionalis*, wings of adult males of both races varying from 178–195.

I have prepared drawings (text-figs. 4–7), showing the variation in the wing-spots among the various races of *C. europæus*, which show how inconstant a characteristic this is.

Upupa epops epops L. and **Upupa epops major** Brehm.

From an examination of a large series of *Upupa e. epops* from the Near East, and 22 *Upupa e. major* from Egypt, it appears that, apart from measurements, there are considerable colour differences.

Upupa e. epops. A pinker and cleaner bird than *major*, with more and purer white on the abdomen, and with less boldly marked flanks and abdomen. Head paler and not so red. Lower neck and upper back much paler.

Upupa e. major. More vinaceous and duller. Less white on the abdomen which is more boldly streaked with black. Under parts generally much dirtier looking. Inner secondaries not so brightly marked and of a more suffused sandy colour. The white subterminal band on the tail is usually narrower. Head a darker and duller red.

The measurements are as follows :—

			Culmen.	
Sex.		*Wing.*	*Depth at base.*	*Length.*
♂	*Upupa e. epops*	130–151	6–7	53–63, 65.
♀	*Upupa e. epops*	131–146	5, 6–7	48–61
♂	*Upupa e. major*	135–148	7, 8–9	56–68
♀	*Upupa e. major*	138–147	8	56–65

Upupa e. major is now a common resident in the Egyptian Delta and up the Nile at least to Assuan. It is absent from the Suez Canal. It breeds early, young being usually out

of the nest during the first few days in April, when *Upupa e. epops* is still passing through Egypt.

The status and migration of *Upupa e. epops* in the Near East seems to be as follows :—

Breeds commonly throughout Asia Minor, Armenia, at Aleppo, where three nests were taken in early April, at Urfa in north-west Mesopotamia, in Syria at Baalbek but apparently not at Damascus. Breeds commonly in the Balkans in May and June. Absent as a breeding species from Crete, though a few breed in Cyprus. A rare breeding species in Palestine, no evidence of its breeding in Sinai, and of course does not breed in Egypt.

They commence leaving Armenia in early August and passage continues throughout September. Passage occurs in Cyprus throughout September. They commence passing northern Sinai in late July, the bulk passing from the middle of August to late September. Latest record 13. x.

They commence arriving in Egypt during the last ten days of August and passage continues till the end of September, birds being most numerous during the first half of that month. In the Sudan they are common in September and remain the winter. They are scarce in the Bahr el Ghazal in winter. It seems doubtful where the bulk spend the winter. Birds occur in northern Somaliland from the end of September and remain at least to the middle of November, if not later.

Very few reach Kenya Colony, though I obtained one on Mount Kenya on 23. xi. 03, and another was obtained by Turner on Lake Rudolf on 13. iii. But they are distinctly rare in Kenya Colony. One has been obtained in Uganda on 17. x. It is possible a few winter in the Jordan Valley in Palestine, as I saw a few on 23. ii., and in north-west Arabia where one was obtained on 18. ii.

In a paper on the birds of Turkanaland (Journ. East Afr. and Uganda N. H. Soc. no. 16, 1921) Van Someren, under the name "*Upupa epops*. European Hoopoe," records a specimen shot in March. Apart from the interest in the record, when will ornithologists use consistent nomenclature? *Upupa*

epops is not the European Hoopoe, but the specific name for the Hoopoe which in various forms occurs throughout the Old World. If Van Someren does not believe in geographical races, why does he use trinomials in many instances throughout his paper? To use nomenclature as a convenience is a parody of science. Inconsistent nomenclature can only lead to confusion in the minds of readers.

Birds commence moving north in early March, for I saw an exceptionally early migrant on the Sea of Galilee on 6. iii., long before the bulk had arrived.

Passage in the Sudan seems to occur throughout March and April, a late bird being obtained at Khartoum on 24. v. and at Port Sudan on 2. v. and 4. v. They are numerous at the latter place on spring passage during the last ten days of March.

Birds commence arriving in Egypt about 1. iii., and passage is at its height from the middle of March to the middle of April. None were seen after 22. iv. They have been recorded as plentiful in Sinai in the middle of April, the first arrivals being noted on 5. iv.

They are common in Siwa Oasis and at Sollum on spring passage during March and early April.

The bulk commence arriving in southern Palestine in the middle of March, passage lasting till early April. They pass Cyprus during March, and have been observed in Crete in early April. Breeding birds arrive at Salonika in Macedonia from 25. iii., at Beirut in Syria during the first ten days of April, and in Armenia in the middle of April.

CORACIAS GARRULUS.

Coracias garrulus semenowi Loud. & Tschusi.

Breeding birds from the Jordan Valley are of this race. Eggs were taken on 1. v. Birds which breed elsewhere in Palestine, and all migrants to Egypt, Somaliland, and eastern Africa belong to the typical form.

Coracias garrulus garrulus L.

Breeds at Aleppo and throughout Syria south to the coastal plains of Palestine and the Judæan highlands.

Birds appear to commence arriving in Egypt from the last days of July, migration being in full swing by 23. viii., and all appear to have passed by the end of September, adult birds being the first to pass.

Birds were common at Baalbek in Syria till at least 10. ix., though they commence leaving for the south in late July, and passage continues till the third week in September, late stragglers being seen in early November.

Birds appear to arrive in the Sudan in early September and throughout October, but few remaining during the winter. In northern Somaliland they arrive in the middle of October and in November. In Kenya Colony they arrive from early November, many remaining through the winter. In Rhodesia they have been seen as early as late September, but they rarely reach Natal before December.

In Kenya Colony, birds of the year arrive about a fortnight before any adults are seen.

Towards the end of January and in early February birds commence leaving South Africa, passing Rhodesia throughout March and April, and through tropical eastern Africa during March and early April. Flocks have, however, been noted moving north near Kilimanjaro as early as 2. ii. They were swarming on the Serengeti Plains during the first half of March 1916, and a few were still on the slopes of Kilimanjaro on 20. iii. On the coast, birds pass north through Mombasa throughout March, my latest record being at Lamu on 9. iv.

Breeding birds commence arriving in Palestine during the first few days of April, some years not till the third week in April, but passage is usually at its height during the last week in April. Obtained in Somaliland on 11. v.

Spring passage in Egypt is rarely noted.

Weigold noted the first arrivals at Urfa in north-west Mesopotamia on 13. iv., and Danford in Asia Minor on 20. iv.

CUCULUS CANORUS.

Cuculus canorus canorus L.

All Egyptian passage migrants which I have examined are of this race. Of four East African winter visitors, one obtained on 6. xi. is of this race, whilst three others are *telephonus*. Five Palestine birds obtained on autumn passage in August are also *telephonus*.

A red female ("*hepaticus*") was obtained in Egypt on 9. v. Whereas the normal Cuckoo obviously mimics the plumage of the Sparrow-Hawk, the red variety equally obviously mimics the Kestrel. Is this a case of initial evolution in a Cuckoo which finds it more convenient to resemble the Kestrel instead of the Sparrow-Hawk, and which perhaps breeds in a district where the Kestrel is common and the Sparrow-Hawk unknown? These red varieties are so far only known in the females, to which of course such mimicry would be more useful than it would be to males.

I believe there is no autumn record of the Cuckoo in Cyprus, though a few are believed to breed there.

Birds have all left Armenia by 18. viii. They stream through Palestine, the first passage migrants, all adults, being seen about 8. vii. They were common by 28. vii. and scarce by 30. viii., the last seen being on 14. ix. Immature birds only passed during the last days of August.

The earliest autumn record for Egypt is on 19. vii., but the bulk pass between 5. ix. and 23. ix.

Adults obtained in northern Somaliland on 30. viii. and 18. ix., and in south-west Arabia on 6. ix. In the Sudan they are said to arrive in large flights about 13. ix. in a very exhausted condition, but do not remain during the winter.

In tropical eastern Africa my first record is on 29. vii. in Uganda and another on 26. viii. at Korogwe in north-east Tanganyika Territory. But they do not arrive in any numbers till October, when they are spread all over the country, remaining the winter.

A few, usually immature birds, reach Rhodesia in January, the Transvaal in December and January. In Portuguese

East Africa they arrive about December and remain till early March. In the South-West African Protectorate they arrive about December and have been obtained till April. Only stragglers reach Cape Colony.

Spring passage and emigration occurs in tropical east Africa during March, when ill-voiced "cuckoo-ing" may rarely be heard. My latest record for Kenya Colony is on 1. iv., though they have been obtained as late as 25. iv. Spring passage is at its height in the Sudan from 14. iv. to early May, a few passing till the middle of May, and birds have been heard calling in the Bahr el Ghazal on 10. iv. They have been obtained in Sinai on 19. iv.

In Egypt the first spring arrivals have been noted on 10. iv., after which they are common to about 14. v. None were observed after 16. v. They have been heard calling on 30. iv. and 1. v.

In Palestine the first spring arrivals were noted in the Jordan Valley and on the Sea of Galilee on 6. iii., and they were calling everywhere round the Sea of Galilee on 9. iii. The bulk seemed to be passing north from 7. iii. to 25. iv. An odd bird may remain behind to breed, but I have no definite evidence of this.

In Armenia they arrive in the middle of May and at once commence laying.

In Cyprus they pass through commonly from 2. iv. to 7. v. First spring arrivals were noted at Salonika on 10. iv.

Cuculus canorus telephonus.

Obtained in Kenya Colony on 21. ii., 25. ii., and 18. xii. Five autumn migrants obtained in Palestine in August are all of this race.

An adult female from northern Somaliland (Archer) shot on 10. xi. is typical of this race.

Clamator glandarius (L.).

Writers have frequently hinted that this Cuckoo in the eastern part of its range is a larger bird than those breeding in the west. It will be seen from the following table of wing measurements that such a difference, slight though it

is, does exist. Localities are arranged in accordance with the size of the wing.

Birds examined.		*Locality.*	*Wing.* *Males.*	*Females.*
7	♂ ♀	Sudan	222–224	198–211
12	♂ ♀	Egypt	201–220	195–199
1	♂	Cyprus	218	—
2	♂ ♀	Syria	216	203
3	♂ ♀	Palestine	208–215	202
1	♂	Asia Minor	212	—
4	♂ ♀	Morocco	205–211	199
3	♂ ♀	Spain	200–210	194
16	♂ ♀	Tropical E. Africa	186–198, 212, 215, 218	185–188, 190
15	♂ ♀	Tropical W. Africa	199–210	193–200
7	♂ ♀	South Africa	191–208	180–186
7	♂ ♀	Central Trop. Africa	196–205	188–191
5	♂ ♀	Angolaland	199	188–198
1	♀	Germany	—	201

Eastern breeding birds can be said to range between 186 and 224 in males, and between 185 and 211 in females. Western breeding birds seem to range between 199 and 211 in males and between 193 and 199 in females. I have included tropical east Africa and tropical west Africa under the eastern and western breeding birds respectively. I do not consider such measurements justify separation.

From all sources I have the following records of birds from localities.

Spain	Feb. (one), March–May, Aug. (one).
Morocco	Feb., April, June, Dec.
Syria	April.
Asia Minor	April.
Palestine	Feb., March, April.
Cyprus	May.
Egypt	Jan.–April.
Sudan	Jan.–May, July (one), Aug., Sept.
Somaliland	Jan.–March, June, July, Aug.
Tropical W. Africa	Feb.–May, July (one), Aug. (one), Sept., Nov., Dec.
Tropical E. Africa.	1st April (one), May, July, Oct.–Feb.
Central Africa	March, Oct.–Nov.
Angolaland	Jan., Oct., Dec.
South Africa	Oct.–March.

Birds have been recorded as breeding regularly in South Africa from December to February. They breed for certain in northern Somaliland.

In both Palestine and Kenya Colony birds were always noted in small noisy parties, keeping continually on the move and very wild. I never found birds in the same place for more than 24 hours.

Otus brucei (Hume).

The common breeding and resident Scops in Aleppo, three nests being found with the old birds by Brig.-Gen. Clarke.

Otus scops scops.

I am unable to recognize *Otus scops pulchellus* (Pallas). Its supposed greyer coloration and larger size are, I believe, matters of individual variation. In the eastern part of its range, *Otus scops scops* is, on an average of a large number of measurements, very slightly larger than the more western and southern birds, but the overlap of measurement is so extensive that the most inveterate "splitter" could scarcely describe a subspecies on it. If splitting is insisted on, then we could describe a whole host of geographical races of all birds with an extensive range, not one of which could be determined from individuals except by locality. It would indeed be a prostitution of the trinomial system.

ATHENE NOCTUA.

Athene noctua glaux (Sav.) and **Athene noctua lilith** Hartert.

In fresh autumn plumage there is very little difference between the upper parts of *glaux* from Egypt and *lilith* from Palestine, except that *lilith* has more white spotting about the head and neck and is slightly more plum-coloured. In worn plumage *glaux* never bleaches to the extent that *lilith* does. This latter race gradually fades until the upper parts of breeding birds (Jerusalem in March and April) are of a pale fawn colour with a regular white nuchal collar.

But the under parts are the best characters of the two races. In *glaux* the under parts in fresh autumn plumage

are never streaked with pure white, whereas *lilith* is invariably streaked with pure white and brown.

In winter *glaux* becomes white below, but never so white as *lilith* in the same plumage.

8 ♂♂.	*A. n. glaux* from Egypt have wings	156–163 mm.
5 ♀♀.	„ „ „	157–164 mm.
9 ♂♂.	„ from Palestine have wings	151–161 mm.
7 ♀♀.	„ „ „ „	153–166 mm.

A. n. glaux is an abundant resident in the Egyptian Delta, but does not extend to the deserts east of the Suez Canal or west of Alexandria.

A. n. lilith occurs throughout Syria and Palestine from Damascus, the Syrian Desert and Baalbek to Gaza and Beersheba in southern Palestine. An *Athene* is a common resident at Aleppo, but I failed to secure specimens.

Athene noctua saharæ (Kleinschmidt).

A Little Owl which I shot at Sollum in western Egypt on 21. i. 20 proves to be of this race. In fresh autumn plumage this subspecies is about the same tint as that of *lilith* in February or March, but is even whiter below and generally a paler bird. Wing of my bird, a female, 155 mm.

Strix aluco aluco L.

On 26. ii. at Hebron during a blizzard I shot a Wood-Owl, which was hooting loudly at noon. The bird was a female with a wing of 264 mm. It was very grey, the whole plumage being almost pure black and white. There is nothing in the Tring Collection which approaches it, but in the British Museum is a similarly coloured bird from Inverness shot in May.

Both Tristram (Survey Western Palestine) and Hartert have pointed out the resemblance which Palestine birds have to others from northern Africa (*mauretanica*), but whereas in the latter country the darker and greyer upper parts are constant, in Palestine, Syria, and Asia Minor birds seem as variable as others from Great Britain and the Continent.

I have examined the following, all in the British Museum:—

?	Lebanon	Dark grey.	Wing 269.
	(Closely resembling *nivicola* from India and China.)		
?	Lebanon	Red.	Wing 269.
♀	Taurus Mts. (Feb.)	Red.	Wing 263.
♀	Asia Minor (Feb.)	Red.	Wing 270.
♂	Lenkoran (Dec.)	Grey.	Wing 280.
♂	Lenkoran (Dec.)	Red.	Wing 286.
♂	S. Coast Caspian (Apr.) .	Grey.	Wing 301.
♀	Asia Minor	Grey.	Wing 286.
♀	Trebizond (Nov.)	Red.	Wing 261.

Witherby's bird from S.W. Persia which I have examined is a male with a wing of 269 mm., and is a pale grey bird with less and narrower streaks on both the upper and under parts. It undoubtedly belongs to the race *sancti-nicolai* of Sarudny.

Falco æsalon insignis (Clarke).

There were about 40 of these birds on passage and resting in some thorn-trees, along with Peregrines, Sparrow-Hawks, and Cuckoos, at the Delta Barrage in Egypt on 11. iv. and 18. iv. They had all gone by 9. v. On 11. iv. all the birds I saw or obtained were adult or immature males.

Those Palestine birds of passage which I have examined also belong to this race.

FALCO NAUMANNI.

Falco naumanni naumanni Fleisch. 1818: Germany and Switzerland.

A summer visitor to Palestine, breeding in large colonies at Jenin and Acre, commencing to arrive on 27. ii. Also common on spring passage in Egypt in late March and early April.

I find that in late winter, spring and summer, birds fade to a large and variable extent, which has given rise to the race *turkestanicus*. Throughout the range of the Lesser Kestrel, the colour of the mantle shows considerable variation, which is not constant within any given area.

An examination of the series at Tring, together with the breeding birds I obtained in Palestine and several shot on

passage in Egypt both by Nicoll and myself, shows that the colour of the mantle counts for nothing, being dark in freshly-moulted birds and fading to various degrees in spring and summer. But both Palestine, Turkestan, and Egyptian birds usually show more blue in the wing than is found in others from southern Europe and northern Africa, but this is by no means constant.

I therefore regard *turkestanicus* as a synonym of the typical race, and not of *pekinensis* as stated by Hartert (Vög. pal. Faun. p. 1082).

Falco naumanni pekinensis (Swinhoe), P. Z. S. 1870, p. 442 : Pekin.

The type of this race is a particularly dark individual shot near Pekin on 18 . x . 68, and is in freshly-moulted plumage. Its mantle can be matched by others in similar plumage from Europe. But it is remarkable in having the whole of the metacarpal joint and upper wing-coverts blue. In the original description of this race the wing-coverts are described as grey "right up to the scapulars." This, and not the colour of the mantle, seems to be the best test of the race.

In the Tring collection are four winter birds from South Africa and Masailand which show more blue in the wing than is found among European birds, but which are certainly not typical *pekinensis* though labelled as such. They are probably Turkestan or Palestine breeding birds. In the British Museum, in addition to the type, are the following birds which I ascribe to *pekinensis* :—

	♂	Pekin	August.
4	♂♂	Nepal	undated.
	♂	Cachar	undated.
	♂	W. Coast India	Feb.
	♂	Lucknow	Feb.
	♂	Dinapur	March.
	♂	Assam	undated.
2	♂♂	Dibrugur	March.
	♂	Naivasha	March.
	♂	S. Abyssinia	Oct.
	♂	Cape Colony	undated.

Nicoll (Handbook B. Egypt) records them as abundant on passage in Egypt, but this is an error as all his birds belong to the typical race. David and Oustalet (Oiseaux de la Chine) state they breed in the hills of Pechili near Pekin, and collect in September in large flocks previous to their migration towards India, but they doubt whether they breed regularly in northern China. Neither Taczanowski nor Przewalski mentions the species in eastern Siberia or Mongolia.

Finch-Davies (Ibis, 1920, p. 621) refers many South African birds to this race on the amount of blue on the wing. Percival (Ibis, 1910, p. 708) observed large flocks of Lesser Kestrels and *Falco vespertinus amurensis* migrating in company over the Kikuyu Forest in Kenya Colony, but fails to designate the race of Lesser Kestrel. It is more than likely that they were *pekinensis*.

As no recent collector in China or eastern Asia has observed or obtained the Lesser Kestrel, and its occurrence in India is rare in winter, I am inclined to believe that the breeding-range of *pekinensis* is very restricted in northern China, and that birds winter in India and Africa south to Cape Colony, passing Kenya Colony *en route*.

FALCO TINNUNCULUS.

The Kestrels of the Near East are perhaps the most confusing group of birds. I have examined a series of over 100 birds from the Tring collection, 29 from the Giza Zoological Museum, and 28 birds collected by myself in Palestine, Egypt, Crete, and eastern Africa. Also a series of 21 birds from southern Arabia and northern Somaliland.

On colour alone, these birds are divisible into richly-coloured birds with dark red thighs, and paler-coloured birds whose under parts are whitish. Such richly-coloured birds occur in England, Crete, Sardinia, throughout Egypt, Palestine and Syria, the Sudan and Nigeria in winter, in Morocco and Algeria in summer and winter, in southern Russia (March), southern Arabia and northern Somaliland in summer and winter, Turkestan, Mongolia, and India. I have

excluded from the above all birds belonging to the well-defined races *interstinctus* (=*saturatus*), *japonicus*, and *carlo*.

The paler birds with whitish under parts occur in northern China (Aug.), throughout Persia and Baluchistan from March to August, as winter visitors to Egypt, Kenya Colony, and the Sudan, in Mongolia (May), throughout Russia in summer; they breed in Palestine and Crete, occur at Eregli in Asia Minor in winter, in central Asia in winter and summer, and in Algeria and Morocco in winter and summer. They are resident in Cyprus and the British Islands, and occur in winter in Nigeria, India, and southern China. Most birds from continental Europe and Asia belong to this pale form.

Breeding birds of the richly-coloured race occur in Egypt, Nubia, Palestine, Crete, Morocco and Algeria, whilst I have examined breeding birds of the paler race from Persia, Mongolia, Italy, southern Russia, Palestine, Crete, Bokhara, Algeria, and the British Islands.

On wing measurement, birds from the Mediterranean are smaller, but this is not constant within any definite locality except Egypt. Also birds from the far north and eastern Asia are slightly larger, but this again is not constant. As the colour characteristic is also constant in Egypt, I can only recognize two races of *Falco tinnunculus* in Palæarctic Europe and Asia (excepting *japonicus*), though perhaps with a larger series of breeding birds from the Mediterranean Region, a sufficient constancy of richer coloration and smaller size might be found to justify a further separation.

Falco tinnunculus tinnunculus L.

Falco t. dorriesi Kirke Swann, Synopt. List Accip. p. 145, 1920.

Breeds in Algeria, Morocco, United Kingdom, continental Europe, and on the Mediterranean Islands (Corsica, Sardinia, Sicily, Crete, and Cyprus), in Syria, Palestine, and Palæarctic Asia except Japan.

Occurs in winter in northern India, Ceylon, Assam,

Burma, and throughout China. Baluchistan, Persia, and Africa south to Togoland in the west and to Tanganyika Territory in the east. Occurs on spring and autumn passage in Egypt.

This race appears to be resident except in the northern part of its range, and I doubt very much whether any birds from southern Europe, Asia Minor, Syria and Palestine, Mesopotamia, Persia, and Baluchistan move south. It is noteworthy that all winter visitors to tropical Africa are particularly large and pale, probably coming from northern Europe, and northern and central Asia.

Wing of males.

4	Corsica and Sardinia	238–246.
1	Spain	245.
4	Italy	238–252.
6	Algeria and Morocco	233–250.
4	Egypt (passage)	236–258.
5	Syria and Palestine	223–245.
2	Crete	240, 244.
7	Macedonia (*Stresemann*)	235–249.
18	Central Europe	236–252.
4	Central Asia	239–250.
3	Mongolia	239–249.
5	India (winter)	231–252.
2	East Africa (winter)	241–254.
3	Eastern Siberia	249–258.
1	Asia Minor (winter)	268.

The wings of females show less geographical variation, measuring from 247–270.

Falco tinnunculus rupicolæformis Brehm.

Adult males. The colour of the back is no guide in determining this race, many of them being quite pale, whilst some birds from Sardinia and England are still darker than Egyptian breeding birds. Under parts redder, especially on the thighs. Generally smaller, the wings of 17 varying from 222–247.

Adult females. Much darker on the back than in *F. t. tinnunculus*. On the under parts the ground colour is darker and the markings heavier. Wings of 12 birds 232–251.

Juvenile plumage (October). In this plumage *rupicolæformis* is even more distinct, the markings on the head, back, and under parts being much heavier and blacker than in any example of *F. t. tinnunculus*.

I am unable to separate the following individual males from *rupicolæformis*:—

Crete (June): wing 241.
Sardinia (Nov.): wing damaged.
Syria (Oct.): wing 228.
Lower Jordan (Feb.): wing 237.
Sollum, W. Egypt (Jan.): wing 236.
Senaar (Nov.): wing 230.
Sokotra (Dec.): wing 225.
Morocco (Dec.): wing 239.
Morocco (May): wing 246.

But in examining females from these localities it is clear that these males are only intensely coloured individuals of the typical race; they are certainly not *rupicolæformis*. One female from Morocco is, however, inseparable from *rupicolæformis*.

I must also refer birds from northern Somaliland and southern Arabia, resident in both localities, to *rupicolæformis*. Eight males have wings from 220–244, and eleven females from 235–259.

Birds from Sardinia are puzzling. Both dark males and females are common, but the majority are inseparable from continental specimens in both colour and size. Of two breeding males from Crete, one is the pale northern European bird, the other a richly-coloured specimen closely resembling Egyptian breeding birds.

Range. Resident in the Egyptian Delta south to Nubia, southern Arabia, and northern Somaliland. Occurs in winter in the Sudan, where it is possibly resident.

Milvus migrans (Bodd.).

The following characters have been noted among the races *M. m. migrans*, *ægyptius*, and *parasitus*, and may be of use in determining visitors to tropical Africa, where all three occur in winter.

M. m. migrans (Bodd.). Bill black in both adults and young. Breast-feathers with broad dark brown shaft-stripes,

usually over 5 mm. broad. Head with little or no red on the crown. Back usually darker in the centre than in either *parasitus* or *ægyptius*. Wing 434–472, usually 440–460.

A strong migrant. I observed several parties passing north over the Pyramids in Egypt on spring migration from 3. iv. to 6. iv., but so far no bird of this race has with certainty been obtained in Egypt. Fully adult black-billed Kites were also frequently seen at Helouan south of Cairo in November and December, whereas none but yellow-billed Kites were observed in the same locality after the end of March.

M. m. parasitus (Daud.). Bill yellow in adults and black in immature birds. Breast-feathers with narrower and usually blacker shaft-stripes than in *M. m. migrans*, seldom exceeding 3 mm. in breadth. Head redder and less whitish than in either *M. m. migrans* or *ægyptius*, but on the whole not such a red bird as *ægyptius*. Tail deeply forked, the difference between the tips of the middle and outer rectrices varying from 30 to 68 mm. Wing 410–455 mm., usually 422–445.

Confined to tropical Africa.

M. m. ægyptius (Gm.). Bill yellow in adults and black in immature birds, though sometimes the black bill is retained till the bird is in apparently adult plumage. Shafts on the breast-feathers as in *parasitus*. General coloration nearly always redder than either of the preceding races. Sclater & Praed (Ibis, Oct. 1919, p. 691) say that this race differs from *parasitus* by its lighter more reddish colour and paler head, the tail being as a rule more reddish. Tail moderately forked as in *M. m. migrans*, the difference between the tips of the centre and outer rectrices varying between 15 and 46 mm. Wing 430–458 mm., usually 440–448.

Resident in the Egyptian Delta and Nubia, a few individuals wandering south in winter to tropical East Africa. Birds from Somaliland and southern Arabia appear to be intermediate between *parasitus* and *ægyptius*.

COLUMBA LIVIA.

Columba livia palæstinæ Zedl.

Zedlitz (J. f. O. 1912, p. 339) described this race from a specimen shot in the Wadi Fara, in the Jordan Valley a few miles north of Jericho, giving as its characteristics a darker coloration than *schimperi*, especially on the upper parts. Wing 215 to 218 mm. He does not mention the most important point, the colour of the lower back, but through the kindness of Dr. Stresemann, I understand that it is the same colour as the mantle.

Hartert (Vög. pal. Fauna) says of *palæstinæ* that the upper parts are as in *schimperi*, the under parts as in true *livia*, therefore darker than *schimperi*. Rump usually somewhat greyish. Wing 203–226. Variable! And further (Nov. Zool. 1917, p. 462) he considers birds from south-west Arabia to be identical with *palæstinæ*. I hope to show that this is incorrect.

Sclater refers these same birds from south-west Arabia to *intermedia* from India. This I also believe to be incorrect.

Sclater & Praed (Ibis, 1920, p. 827) draw attention to the fact that birds from the Red Sea Province of the Sudan are not unlike those from southern Arabia, and consider the Sudanese birds nearest *schimperi*, the south Arabian birds nearest *intermedia*, whilst Palestine birds are nearest to true *C. l. livia*.

I have been fortunate in examining the whole series at Tring and the British Museum, together with 19 birds which I recently collected in Syria, Palestine, Egypt, Crete, and on the coast of the western desert of Egypt. I also examined a large series of Egyptian and Sudanese specimens in the Giza Zoological Gardens Museum at Cairo.

It is a most unfortunate thing that the type of this race came from north of Jericho, for the locality is on the borderline between *palæstinæ* and *gaddi*. Birds which agree with the type of *palæstinæ* occur in the southern extremity of the Jordan Valley, Dead Sea, Sinai, throughout Arabia south to Muscat and Aden, and constitute a small pale desert race with a grey rump (rarely whitish).

In the northern Jordan Valley and throughout Palestine proper, occurs *gaddi*.

During autumn and winter large flocks of Rock-Pigeon visit the Lower Jordan Valley from the Judæan hills, and these appear to be always white- or whitish-rumped birds. But in spring the only Rock-Pigeon which I saw breeding in the earth cliffs of the River Jordan were grey-rumped birds. In the Upper Jordan Valley (Yarmuk Gorges) I saw huge flocks of white- or whitish-rumped birds throughout the year. Tristram (Survey of Western Palestine) noted this, but referred the grey-rumped birds to *schimperi*, and the white-rumped birds to *C. l. livia*. But this is not correct, for the grey-rumped birds are the true *palæstinæ*, which really only occur within the limits of Palestine in the Lower Jordan Valley and round the Dead Sea, and the white-rumped birds are *gaddi*, which are discussed later in this paper.

True *palæstinæ* are a shade darker both above and below than *schimperi*, not so dark as *gaddi* below, and of course much paler than either *intermedia* or *neglecta*. Lower back grey as the mantle, rarely paler.

The following is the detail of the birds of this race which I have examined :—

No.	*Sex.*	*Locality.*	*Wing.*	*Colour of lower back.*
2	♂	Jericho	218, 222	White and as back.
2	♀	Jericho	205, 216	Both white.
1	♀	Dead Sea	215	As back.
1	♀	Sinai	213	As back.
1	♂	Muscat	225	Pale grey.
6	♂	South-west Arabia.....	220–235	All as back.
3	♀	do.	211–218	All as back.

Columba livia butleri Meinertz.

Columba livia butleri Meinertz. Bull. B. O. C. xlii. 1921, p. 6.

Identical with *palæstinæ* in the colour of the mantle and under parts, the lower back being the same colour, or nearly so, as the mantle. Larger and a shade darker than *schimperi*, but not quite so dark above and below as *gaddi*.

Smaller than *palæstinæ*, the wings of three males measuring 207, 210, and 212 mm.

So far only known from Gebeit in the Red Sea Province of the Sudan.

Type ♂ (Butler coll.). Shot on 22.iii.12 at Gebeit in the Red Sea Province of the Sudan. Brit. Mus. Reg. No. 1915.12.24.255.

Columba livia gaddi Sar. & Loud.

This race was described from a specimen obtained on the lower reaches of the Karun River in S.W. Persia. I have not examined topo-typical examples, but birds from the highlands of S.W. Persia and Mesopotamia agree with the description, as also do others from Syria, Palestine (except the Jordan Valley), Anatolia in Asia Minor, Crete, and Sollum in western Egypt. The original description shows them to be intermediate in colour between *schimperi* and *neglecta*, whilst in size they agree with *C. l. livia*, *neglecta*, and *intermedia*.

Birds I have examined from the above localities are very near *C. l. livia* and paler examples of *intermedia*, and are markedly darker than *palæstinæ*. Their lower back is very variable, varying from pure white to whitish-grey. Only one—from Mesopotamia—has the lower back the same colour as the mantle.

In size they are considerably larger than *palæstinæ*.

The following is the detail of birds of this race which I have examined :—

No.	*Sex.*	*Locality.*	*Wing.*	*Colour of lower back.*
1	♂	S.W. Persia	240	Whitish-grey.
2	♀	Mesopotamia	220, 220	One white, the other grey as back.
1	♀	40 m. E. of Damascus .	225	Whitish-grey.
1	♀	Birejik on the Upper Euphrates	219	Whitish-grey.
1	♀	N.W. Persia	223	Whitish-grey.
2	♂♀	Sea of Galilee	225, 212	Pale grey.
1	♂	Anatolia	221	White.
2	♀	Palestine Coast	210, 212	Whitish-grey.
2	♂	Crete	216, 221	White.
3	♂	Sollum, W. Egypt	211–219	White.

C. l. neglecta is darker than *gaddi*, though not quite so dark as *intermedia*. Some birds from Kashmir and Turkestan are inseparable from *intermedia*. A pair in the British Museum from Samarkhand have wings 220 and 238, with lower backs grey and as back.

I have seen examples of *C. l. livia* from Morocco, Algeria, Italy, Sardinia, Greece, Montenegro, and the island of Lemnos.

A male in the British Museum from Tunis has a wing of 211 mm., with a lower back the same colour as the mantle. Both upper and lower parts are similar to *C. l. livia*.

Columba livia schimperi Bp.

I obtained a series of seven birds, all believed to be wild, from Helouan and the Fayoum. The wings of males run from 192 to 199 mm. and that of females from 190 to 204 mm. They are remarkably constant in the colour of the mantle and scapulars, which is much paler than in *C. l. livia*, and very similar (if anything slightly paler) to *palæstinæ*. Under parts much paler than *C. l. livia* and slightly paler than *palæstinæ*. Lower back from pure white to grey—the same colour as the mantle.

There are in the Giza Zoological Museum nine Rock-Pigeons from Wasta in Upper Egypt. Of these, four have pale grey lower backs, and five have almost white backs (not so white as white cotton-wool). The former are three females with wings of 184, 184, and 191, and one male with a wing of 184 mm. The latter are two females with wings of 189, and three males with wings of 192, 200, and 205 mm.

So we see that birds with white lower backs tend to be larger than those with grey lower backs.

Two females which I shot at Helouan have wings smaller than any of the above and their lower backs are even darker grey. Two females from Dongola, alive in the Giza Zoological Gardens, have almost white lower backs and wings of 197 and 205 mm.

Three unsexed birds from Egypt and Nubia in the

British Museum have wings 202–211 and lower backs the same colour as the back.

In typical *schimperi* the mantle is much lighter than in *C. l. livia*, and slightly paler than in *palæstinæ*; the bird is much smaller and the rump, though usually grey, is frequently whitish grey or almost white.

Now in Egypt there is no doubt that all the Rock-Pigeons have been, or could have been, contaminated by or even originated from domesticated stock. But this does not alter the fact that Egyptian birds all tend to revert, not to typical *C. l. livia*, but to a geographical race, which has been named *schimperi*. It can never be proved whether the origin of *schimperi* is artificial or natural; the fact remains that the climatic or other conditions of Egypt produce a geographical race of *Columba livia* which is different from all others.

STREPTOPELIA TURTUR.

Streptopelia turtur turtur (L.).

Common on both passages in Egypt and Palestine, none remaining the winter.

In 1920 spring passage in Egypt commenced about 18. iv. Birds were common by the first week in May and till at least 26. v. Migration seemed to pass not only over the Delta, but over Suez and up the Suez Canal to Port Said.

In Palestine during 1920 northern migration was in full swing in the Jordan Valley and over the Judæan highlands from 26. iv. to at least 4. v.

Streptopelia turtur arenicola Hartert.

Birds of this race occur in equal numbers with birds of the typical form and at the same periods in both Egypt and Palestine.

Streptopelia turtur isabellina Bonaparte.

A local summer visitor to the Egyptian Delta, arriving about the end of April. Their breeding colonies are by no means numerous.

STREPTOPELIA SENEGALENSIS.

Streptopelia senegalensis æquatorialis L.

Birds from Palestine, as already pointed out by Hartert, seem to be identical with the tropical African race. Their status seems to be that of a rare resident, and instead of occurring in the Jordan Valley, as do representatives of other tropical forms occurring in Palestine (*Amydrus*, *Crateropus*, *Cinnyris*, etc.), they are completely absent from that area. I only saw birds on two occasions, once at Jerusalem during a snow-storm in February, and once at Ludd in the coastal plain in May.

In Syria they are a plentiful resident at Aleppo, though they are absent from Antioch. At Aleppo they breed in the houses.

Streptopelia senegalensis ægyptiaca (Lath.).

The only race occurring in Egypt, where it is a plentiful resident.

Streptopelia decaocto decaocto (Friv.).

A common but local resident in Syria and Palestine. Abundant in the Jordan Valley, a few occur in the coastal plain from Haifa to Gaza, and a few at Beirut. Absent from Damascus and Baalbek. A plentiful breeding species at Aleppo.

ALECTORIS GRÆCA.

Alectoris græca cypriotes Hart.

An examination of the Chukar from Crete, Cyprus, the northern Sporades (Mytilene and Lemnos), Asia Minor, the Syrian Desert forty miles east of Damascus, Mount Carmel, Jerusalem and the Judæan highlands, and from Engeddi on the west shore of the Dead Sea, compel me to unite them all on colour characters with the Cypriote bird, which holds the oldest name—*cypriotes*. The two Engeddi birds do, however, appear to be more or less intermediate between *cypriotes* and *sinaica*.

The following are detail wing-measurements from the various localities :—

	♂♂.	♀♀.
Jerusalem	167, 170	—
Forty miles east of Damascus	161, 164, 165	151, 155
Judæan highlands	165	154
Asia Minor	—	158
Mount Carmel, Palestine	—	155
Eregli, S.E. Asia Minor	—	154
Engeddi, Dead Sea	—	158
Cyprus	162–169	153–157
Crete	155, 160, 163	148, 151
Sporades	—	148

On size also, I think it will be agreed, they can be united, though Cretan birds are on the small side.

Alectoris græca sinaica (Bp.).

This form occurs, according to skins I have examined, in Syria in the Anti-Lebanon behind Damascus, in the Moab hills east of the Jordan and throughout the Jordan Valley south to Jericho, and in the Sinai Peninsula.

Birds are markedly paler than *cypriotes* on the back and have a much greyer head, in some birds almost pure grey ; this no doubt induced Dawydoff to describe *margaritæ*, which must become a synonym of *sinaica*.

The wing of males varies from 165 to 177, once 151, and of females from 151 to 159 mm.

COTURNIX COTURNIX.

Coturnix coturnix coturnix (L.).

The Common Quail is a sparse resident throughout Palestine and Egypt and abundant on both passages. In early May 1920 adults with brood were flushed at the Delta Barrage in Egypt. A certain number winter regularly in Palestine, especially in the Jordan Valley, in Egypt and near Sollum, but whether these are the resident birds or part of the passage migrants, I am unable to say.

In Palestine spring passage appears to commence in early March. Autumn passage seldom commences before the middle of August and is at its height in early September.

In Egypt autumn passage usually commences during the last ten days of August and is at its height during the second week in September, the bulk moving farther south to the Sudan where they are common in winter. A few reach Kenya Colony, where I obtained a male at Mbuyuni on the Serengeti Plains on 11.iii.1916. But it seems to be the exception for the European Quail to cross the Equator, their usual southern limit in winter being a line from the Gambia in western Africa to the Equatorial Provinces of the Sudan, and thence to Abyssinia and northern Somaliland.

Spring passage in Egypt lasts from the latter half of March to the middle or end of April.

This eastern Mediterranean passage of Quail extends from Palestine, through Sinai and Egypt to about Mersa Matruh (200 miles west of Alexandria). Very few birds pass through Sollum (300 miles west of Alexandria), and the bird is practically unknown at Siwa Oasis in the western Desert of Egypt.

It may be of interest to point out that whereas in 1908 the total number of quail exported from Egypt amounted to 1,208,000 birds (which is by no means the total number of birds killed) that figure has systematically fallen, till in 1916 but 551,400 were exported. The figures are ominous.

Coturnix coturnix africana Temm. & Schleg.

The occurrence of this race in Egypt (see Nicoll, Handlist Birds of Egypt, p. 81) is incorrect. All Nicoll's specimens, which I have examined, are merely the red variety of the typical race (*C. baldami*).

C. c. africana appears to be resident in South Africa, Uganda, and Kenya Colony, where it is not rare in cultivation round Nairobi and in the Kikuyu Country. Also Madagascar and the Comoro Islands.

BURHINUS ŒDICNEMUS.

Burhinus œdicnemus œdicnemus (L.).

A specimen obtained at Kisumu on the Victoria Nyanza on 15.i.17. This is the second record from tropical East

Africa, another, now at Tring, having been obtained by Van Someren at Elmentaita Lake on 17. i.

Burhinus œdicnemus saharæ (Reichw.).

All Palestine (Jordan Valley and southern Palestine) birds belong to this race, also birds coming from the desert fringing the Egyptian Delta. They do not occur within the Delta.

Burhinus senegalensis senegalensis (Swains.).

A common resident within the Egyptian Delta. Five birds obtained agree with others from tropical Africa. They appear to breed exclusively on flat-topped roofs. Fresh eggs taken at the Delta Barrage on 9. v. This species does not occur outside cultivated areas in Egypt.

Charadrius hiaticula tundræ (Lowe).

It is this race which occurs in Egypt, Somaliland, and Kenya Colony in winter. In the latter country they are common on the coast from October onwards. They do not seem to move till April, and a few were still at Lamu on the coast on 22. iv., after which date all had gone north.

Charadrius dubius curonicus Gm.

In Egypt they are abundant in winter and a few remain to breed.

In Kenya Colony they are not so common as *Charadr. hiaticula*, and appear to be almost absent from the coast. Obtained on the Victoria Nyanza in January and on Lake Rudolf in March.

Charadrius alexandrinus alexandrinus L.

A common resident on the coast of Syria, Palestine, and Egypt. Also a very common breeding species on the salt lakes 40 miles east of Aleppo.

Charadrius varius allenbyi Nicoll.

Charadrius varius allenbyi Nicoll, Bull. B. O. C. xlii. 1921, p. 7 : Egypt.

A common bird in the Egyptian Delta, but absent from the north coast of Sinai and Palestine. It does not occur west of Alexandria, at any rate in winter.

National Museum

I have recently measured a series of 44 birds of this and the typical race, and append the results :—

5 males from Egypt ; wings 102–111.	Average 107.
6 females from Egypt ; wings 104–112.	Average 108.
17 males from tropical Africa ; 98–106.	Average 102·5.
16 females from tropical Africa ; 98–110.	Average 104·5.

Charadrius mongolus atrifrons Wagl.

In 1916 this Plover was common on the coast of Africa around Mombasa in March and April, but had all left for the north by 19. iv. Four were obtained.

Charadrius leschenaulti Less.

Very common on the coast of Syria, Palestine, and Egypt west to Mersa Matruh in winter. Absent from Sollum. They had mostly left for the north by the middle of March. On the coast of east Africa they were abundant from November to the third week in April.

Charadrius asiaticus asiaticus Pall.

An abundant winter visitor to the open grass plains of Kenya Colony, arriving in flocks of from 10 to 40 birds in early November and remaining till the last few days in March. They were scarce in the first week in April. My latest spring record is two seen at Nairobi on 7. v. They assume full breeding plumage before leaving.

This species appears to avoid the coast, except for stragglers, but spreads out in winter from the Serengeti Plains and Makindu to the Victoria Nyanza, being perhaps commonest on the Athi Plains.

Squatarola squatarola L.

Common on the coast of eastern Africa in winter, commencing to arrive in late October and leaving in early April. All had gone north from Lamu by 20. iv. No record from inland. Three April birds from north of Mombasa appear to be the typical race, whilst winter birds from northern Somaliland are certainly the eastern form *hypomelæna*.

Gallinago media Lath.

A common winter visitor to Kenya Colony, first arrivals being noted on 30. ix. Common till the end of April. My latest record is at Nairobi on 11. v.

Limnocryptes gallinula (L.).

The Jack Snipe is a rare winter visitor to Kenya Colony. I shot a couple at Nairobi on 15. xi. 15, and on the same day bagged specimens of *Gallinago media*, *G. nigripennis*, and *G. gallinago*. I again saw a Jack Snipe at Naivasha on 8. xi. Others have been obtained at Nairobi by Percival and the late Capt. Woosnam.

Numenius arquatus lineatus Cuv.

All Egyptian specimens I have seen belong to this large eastern race. A series of nine birds from the coast of Kenya Colony are also of this race, the following being the measurements :—

Sex.	*Number.*	*Locality.*	*Wing.*	*Culmen.*
♂	2	Egypt	281–284	130–145
♀	2	Egypt	306	153–190
♂	7	Kenya Colony	276–295	130–145
♀	2	Kenya Colony	293, 296	180, 190

An abundant winter visitor to the eastern coasts of Africa from the end of October to the end of April. A few occur inland on Lake Naivasha and on the Victoria Nyanza.

Hæmatopus ostralegus.

Not obtained. One seen at Entebbe on Victoria Nyanza on 20. iii. 15, a few at Mombasa (Nov., Dec., April, May), at Tanga (November), Mafia Island (March), and at Dar-es-Salaam (September to November). They were not common anywhere.

II.—*Notes on the Birds of Tsushima and Iki Islands, Japan.*

By Nagamichi Kuroda, *Rigakushi*, F.M.B.O.U.

The following list with notes on the birds of Tsushima and Iki Islands, between Kiusiu and Corea, is based in part on the collection I made on the occasion of my visit to the islands between the end of September and the early part of November of last year (1920), and in part on specimens preserved in the Tsushima Middle School. The following list of localities with dates will indicate the route travelled :—

September 24. Leave Hakata, Kiusiu. 25. Izugahara, Tsushima. 27. Kechi, do. 28. Mine, do. 30. Nita-mura, do.—October 6. Meboro, do. 11. Waniura, do. 13. Sasuna, do. 15. Nita-mura, do. 17. Izugahara, do. 18. Sasu-mura, do. 19. Izugahara, do. 20. Azamo, do. 22. Aso Channel, do. 23. Tsutsu-mura, do. 23. Aso Channel, do. 24. Komoda, do. 25. Izugahara, do. 26. Kechi, do. 27. Nukadake-mura, do. 29. Kechi, do. 30. Izugahara, do. 31. Katsumoto, Iki Island.—November 4. Leave Ashibe, do. 5. Reach Hakata, Kiusiu.

In the preparation of this paper, Messrs. S. Fukagawa and Y. Utano, of the Tsushima Middle School, have given me many valuable specimens. Mr. N. Teraoka, the collector, has also rendered me very useful help. To all these gentlemen my best thanks are due.

The principal papers on birds of Tsushima were published by the late Dr. Ijima (Journ. Coll. Sci., Imp. Univ. Jap. v. pt. 1, 1891, pp. 105–128), and Seebohm (Ibis, 1892, pp. 87–99, 248–250, & 399–400). Mr. Teraoka and I collected 60 species and subspecies in these islands. I have been able to add 43 species and subspecies to those which have hitherto been known from them, bringing up the total number of forms to 134.

On Iki Island there is nothing published, though Messrs. Namiye and Tsuchida collected some birds there

and brought them back to the Zoological Museum of the Tokyo Imperial University. Mr. Teraoka visited the island and obtained 13 species and subspecies.

All the known species and subspecies of the avifauna of Tsushima and Iki Islands are here listed; those marked with an asterisk indicate the new additions to the avifauna of Tsushima.

*1. **Colymbus stellatus** Pontoppidan.

One specimen is preserved in the Tsushima Middle School.

2. ? **Colymbus arcticus viridigularis** (Dwight).

One young female was obtained in Tsushima (Ijima, p. 126).

3. **Dytes auritus** (Linn.).

Specimens were obtained in Tsushima (Ijima, p. 127; Seebohm, Ibis, 1892, p. 98).

4. **Pedetaithya griseigena holboelli** Reinhardt.

A fine pair was shot at Takeshiki, Tsushima (Ijima, p. 127).

5. **Diomedea albatrus** Pallas.

A specimen was obtained by Jouy in Tsushima, 2 June, 1885 (Clark, Proc. U.S. Nat. Mus. xxxviii. 1910, p. 149).

*6. **Puffinus leucomelas** (Temminck).

One specimen is preserved in the Tsushima Middle School. I observed this bird near the mouth of Katsumoto Harbour, Iki, Oct 16.

7. **Phalacrocorax capillatus** (Temm. & Schl.).

A specimen was obtained in Tsushima (Ijima, p. 122). Another specimen is in the Tsushima Middle School.

8. **Phalacrocorax carbo** [(?) **sinensis** (Shaw & Nodd.)].

Holst obtained an example in Tsushima (Seebohm, Ibis, 1892, p. 400).

*9. **Bubulcus ibis coromandus** (Boddaert).

One young specimen is preserved in the Tsushima Middle School.

10. **Demiegretta sacra** (Gmelin).

D. ringeri Stejneger.

Mr. Teraoka once met with this bird in the southern island of Tsushima, but could not obtain it. Several specimens were collected by Jouy, Ringer, Holst (Seebohm, Ibis, 1892, p. 95) and Messrs. Namiye and Tsuchida (Ijima, p. 122). I am inclined to think that the examples from Tsushima, Corea, and Liu-kiu Islands average smaller than those from Micronesia.

11. **Ardea cinerea jouyi** Clark.

Dr. Ijima reported (in his paper, p. 122) it from Tsushima, and a specimen is in the Tsushima Middle School.

*12. **Gorsachius goisagi** (Temminck).

A fine specimen is in the Tsushima Middle School.

*13. **Butorides striatus amurensis** Schrenck.

An immature female was obtained by Mr. Teraoka at Nitamura, Tsushima, Oct. 4.

*14. **Nannocnus erythmus** (Swinhoe).

An adult specimen is in the Tsushima Middle School.

*15. **Ciconia ciconia boyciana** Swinhoe.

An adult example of this Stork is also to be found in the Tsushima Middle School. This is a remarkable addition to the avifauna af the islands.

16. **Aix galericulata** (Linn.).

Two males were purchased at Agami, Tsushima, Oct. 19; an adult male was obtained by Mr. Teraoka at Azamo, Tsushima, Oct. 21; and a young male was presented by Mr. C. Kato, which was obtained at Nitamura, Tsushima, Oct. 23. Dr. Ijima and Seebohm reported it from the same islands. Common on the streams of the island.

*17. **Anas platyrhyncha platyrhyncha** (Linn.).

An adult female was shot by Mr. Teraoka at Sasuna-mura, Tsushima, Oct. 15. It is rather rare in that season in the islands.

18. **Polionetta pœcilorhyncha zonorhyncha** Swinhoe.

This Duck was reported by Seebohm (Ibis, 1892, p. 96) from Tsushima.

19. **Nettion crecca crecca** (Linn.).

Holst obtained it in Tsushima (Seebohm, Ibis, 1892, p. 96).

20. **Nettion formosum** (Georgi).

Messrs. Namiye and Tsuchida (Ijima, p. 123) and Holst (Seebohm, Ibis, 1892, p. 96) obtained it in Tsushima. The Tsushima Middle School has specimens of the Duck. It is rather common.

*21. **Dafila acuta acuta** (Linn.).

An immature specimen is in the Tsushima Middle School. It is undoubtedly rare.

22. **Bucephala clangula clangula** (Linn.).

Holst obtained the Golden-eye in Tsushima in November (Seebohm, Ibis, 1892, p. 400).

*23. **Mergus serrator** Linn.

A specimen is preserved in the Tsushima Middle School.

24. **Astur gentilis schvedowi** Menzbier.

Seebohm (Ibis, 1892, p. 400) reported the Goshawk from Tsushima.

25. **Accipiter nisus nisosimilis** (Tickell).

One female scarcely adult and three young birds were shot by Mr. Teraoka on Tsushima, Oct. 8, 14, 16, 22. The wings measure: 245 mm., 245 mm., 248 mm., 255 mm. Dr. Hartert (Vög. pal. Faun. ii. p. 1155) considers the Japanese and Corean Sparrow-Hawks to be identical with Indian subspecies, *A. n. nisosimilis* (Tick.).

Swann (Synopt. List Accipitres, Part i. 1919, p. 31) separates the Kamtschatkan and Japanese forms from *nisosimilis* under Dr. Stejneger's name of *pallens*, and he considers that *pallens* is an insular race with light and dark

phases. But Swann added that the distribution of *A. n. nisosimilis* is as follows :—"N. and Central Asia from Turkestan to Japan; in winter to India, Kashmir, Assam, Burma" (*l. c.* Part ii. 1919, Addenda et Corrigenda to Part i.). There is a question whether the two forms—*nisosimilis* and *pallens*—are found in Japan. Further investigation is needed before the question can be settled.

Seebohm (Ibis, 1892, p. 250) reported the Sparrow-Hawk from Tsushima under the name of *A. nisus*. Some specimens are also preserved in the Tsushima Middle School. This Hawk is common on the islands.

*26. **Haliaëtus albicilla** (Linn.).

Two immature specimens are preserved in the Tsushima Middle School.

*27. **Buteo ferox hemilasius** Temm. & Schl.

One specimen is found in the Tsushima Middle School.

28. **Buteo buteo japonicus** (Temm. & Schl.).

Holst obtained this Buzzard from Tsushima (Seebohm, Ibis, 1892, p. 95). Several specimens are preserved in the Tsushima Middle School. The natives call it "Nobuku."

*29. **Butastur indicus** (Gmelin).

A specimen is preserved in the Middle School, Tsushima.

30. **Milvus lineatus lineatus** (Gray).

1 ♂ juv. and 1 ♀ ad.: Azamo, near Tsutsu-mura, Tsushima, Oct. 21; 1 ♀ juv.: Izugahara Harbour, Oct. 25. Wing measures: 1 ♂ juv. 495 mm., 1 ♀ ad. 477 mm., 1 ♀ juv. 493 mm. Very common on the islands of Tsushima and Iki. Seebohm (Ibis, 1892, p. 95) reported it from Tsushima. These examples are no doubt the typical form; the Formosan form, *formosanus*, has a much shorter wing (Kuroda, 'Dōbutsugaku Zasshi,' xxxii. 1920, p. 245).

*31. **Cerchneis tinnunculus japonica** (Temm. & Schl.).

Two specimens are preserved in the Tsushima Middle School.

32. **Pandion haliaëtus haliaëtus** (Linn.).

Holst obtained the Osprey on the Tsushima Islands (Seebohm, Ibis, 1892, p. 95). Jouy also collected it on the same islands, 25 May, 1885 (Clark, Proc. U.S. Nat. Mus. xxxviii. 1910, p. 159).

33. **Phasianus colchicus karpowi** Buturlin.

P. karpowi harpowi Buturlin.

P. karpowi buturlini Clark.

Nineteen specimens of adults and some young of this Pheasant were shot by Mr. Teraoka on both islands of Tsushima, Sept. 29–Oct. 29. Wing: in 10 adult males, 226–243 mm.; in 9 adult females, 196–206 mm. It is very common on the islands, especially so on the northern island. Dr. Ijima stated that the Pheasant was introduced into the northernmost island, Unishima, Tsushima, from Corea in the Middle Ages, whence it spread over both islands (see Ijima, p. 127).

I carefully examined the series of males of the specimens from Tsushima and those from Corea for the purpose of the identification of the two subspecific names above mentioned. I have come to the conclusion that the series of both forms before me no doubt belong to one subspecies, and cannot be separated into two forms as Mr. Clark believed. The following five points are the results of my study, and show the reasons why the two forms cannot be separated :—

(i.) The colour of the mantle and flanks of the males in the supposed two forms is variable in the same stage and even in the same locality; (ii.) the width and colour of the eyebrow are variable (in some almost white, in some buffy, and in others white suffused with buffy) from the same locality. A specimen from northern Corea has its eyebrow white and distinctly suffused with rusty colour; (iii.) the colour of the crown is also variable in the same locality; (iv.) the colour and barring on the central tail-feathers are also indefinite in individuals; and (v.) the degree of archness of bill is variable, though the examples from Tsushima have their bill on an average slightly more arched than those of Corea, but

this difference seems to be of an indefinite character when large series of the specimens from both Corea and Tsushima are examined.

I wholly agree with the opinion of Dr. Hartert (Nov. Zool. xxiv. 1917, p. 448) His words are as follows:— "Clark (Proc. U.S. Nat. Mus. xxxii. 1907, p. 468) separated the Pheasant from Tsushima Island as *P. karpowi buturlini*. I have examined five adult males from Tsushima, and find them not to differ from *karpowi*, the supposed differences pointed out by Clark being variable or non-existing. One adult male in the Tring Museum has the white ring interrupted in front for about 3·5 cm., the others have the ring complete."

*34. **Coturnix coturnix japonica** Temm. & Schl.

One adult male and four adult females were obtained by Mr. Teraoka on the southern island of Tsushima, Oct. 22–25. The male has its throat still in the reddish summer plumage. These examples average smaller than Hondo specimens. The wings measure as follows:—1 ♂, 94 mm.; 4 ♀, 95–98 mm.

Some specimens are preserved in the Tsushima Middle School.

35. **Limnobænus fuscus erythrothorax** (Temm. & Schl.).

Holst obtained this Rail on Tsushima (Seebohm, Ibis, 1892, p. 400). Seebohm mentioned its length of wing as 4·5 inches (=114·5 mm.). I erroneously recorded (Annot. Zool. Japon. 1918, p. 563) that *L. paykulli* (Ljungh) was obtained on these islands.

*36. **Rallus aquaticus indicus** Blyth.

A specimen was presented by Mr. S. Fukagawa. It was obtained near Izugahara, Tsushima (date unknown). Another specimen is also in the Tsushima Middle School. Very rare on the islands.

*37. **Gallinula chloropus parvifrons** Blyth.

A specimen of this Moorhen is preserved in the Tsushima Middle School.

38. **Hæmatopus ostralegus osculans** Swinhoe.

Messrs. Namiye and Tsuchida obtained specimens on Mitsushima, Tsushima (Ijima, p. 125).

39. **Numenius cyanopus** Vieillot.

A specimen was obtained on Tsushima (Ijima, p. 126). One specimen is preserved in the Tsushima Middle School.

40. **Erythroscelus erythropus** (Pallas).

Totanus fuscus (L.).

A specimen was collected on the northern island of Tsushima (Ijima, p. 126).

41. **Rhyacophilus glareola** (Linn.).

Dr. Ijima (p. 126) reported it from Tsushima.

42. **Heteroscelus incanus brevipes** (Vieillot).

Mr. Teraoka collected this Tattler at Nitamura, Tsushima, Oct. 16. Jouy obtained it on Tsushima, 29 May, 1885 (Clark, *l. c.* p. 154).

43. **Actitis hypoleucus** (Linn.).

Seven specimens of the immature of this Sandpiper were obtained by Mr. Teraoka and myself in four localities on Tsushima, Oct. 2–25. Dr. Ijima (p. 126) and Seebohm (Ibis, 1892, p. 97) also reported it from the islands. It is common but not abundant.

An immature male was collected by Mr. Teraoka at Kujirabuse, Iki Island, Nov. 3.

*44. **Gallinago gallinago raddei** (Buturlin).

A male was shot by Mr. Teraoka at Nitamura, Tsushima, Oct. 5. The Tsushima Middle School also possesses specimens.

45. **Gallinago megala** Swinhoe.

Seebohm (Ibis, 1892, p. 250) reported it as a migrant on Tsushima, Aug. 11 (year not mentioned).

*46. **Neospilura solitaria** (Hodgson).

An adult female was shot by Mr. Teraoka at Nitamura, Tsushima, Oct. 17. Exposed culmen 73·5 mm., wing 157 mm., tail 72·5 mm., tarsus 35·5 mm. Undoubtedly very rare in the island.

The Japanese bird was separated by Bonaparte under the name of *Spilura solitaria japonica*, but no description was given.

*47. **Scolopax rusticola rusticola** Linn.

A specimen is preserved in the Tsushima Middle School.

48. **Larus canus major** Middendorff.

Messrs. Namiye and Tsuchida obtained an immature specimen in Tsushima (Ijima, p. 125).

49. **Larus argentatus vegæ** Palmén.

Dr. Ijima (p. 124) and Seebohm (Ibis, 1892, p. 96) reported this Gull from Tsushima under the name of *L. cachinnans* as well as *L. vegæ*. These two names are apparently applied to different forms, but in Tsushima as well as Hondo only *L. vegæ* is found.

50. **Larus crassirostris** Vieillot.

2 ♂ ad.: Sasuna-mura, Tsushima, Oct. 13; 1 ♀ ad. and 1 ♀ juv.: Izugahara Harbour, Tsushima, Oct. 25. This Gull is very common in the islands. Dr. Ijima (p. 125) and Seebohm (Ibis, 1892, p. 96) also mentioned it.

51. **Cerorhyncha monocerata** (Pallas).

Messrs. Namiye and Tsuchida obtained this Auk in Tsushima, March 18 (Ijima, p. 124), and Holst collected it from the same islands, March 19 (Seebohm, Ibis, 1892, p. 96). A specimen is preserved in the Tsushima Middle School. Probably a spring visitor to the islands.

52. **Cepphus carbo** Pallas.

A single example of this bird was shot by Messrs. Namiye and Tsuchida in Tsushima, March 27 (Ijima, p. 123).

53. **Synthliborhamphus antiquus** (Gmelin).

Several specimens were obtained by Messrs. Namiye and Tsuchida in Tsushima, March 15 (Ijima, p. 123), and Seebohm (Ibis, 1892, p. 96) reported it from the same islands. Specimens are also preserved in the Tsushima Middle School.

54. **Synthliborhamphus wumizusume** (Temminck).

A male example is preserved in the Zoological Museum, Tokyo Imperial University. It was obtained in Tsushima (Ijima, p. 124).

55. **Streptopelia orientalis orientalis** (Latham).

Two specimens were obtained by Mr. Teraoka. One female from Sasuna-mura, Tsushima, Oct. 13, and the other a male from Naiin, Kutamura, Tsushima, Oct. 20. Dr. Ijima (p. 127) and Seebohm (Ibis, 1892, p. 43) reported it from these islands, and specimens are also found in the Tsushima Middle School.

*56. **Janthœnas janthina janthina** (Temm.).

One male was obtained by Mr. Teraoka at Nita-mura, Tsushima, Oct. 7. Crop region almost without purplish lustre. This example is probably not old. Wing measures 241 mm. in length. It is rare in the islands.

*57. **Sphenurus sieboldi sieboldi** (Temm.).

One adult male specimen was presented by Mr. Fukagawa. It was obtained near Izugahara, Tsushima (date unknown). Wing measures 196 mm. in length. A specimen is preserved in the Tsushima Middle School.

*58. **Otus bakkamœna semitorques** Temm. & Schl.

One male example was shot by Mr. Teraoka at Nita-mura, Tsushima, Oct. 3. The wing measures only 164 mm. in length. Seebohm (Ibis, 1892, p. 250) reported it from the islands, and he mentioned that Holst obtained one adult with two young ones on 14 July. Jouy also obtained it on 2 June, 1885 (Clark, *t. c.* p. 159). The Tsushima Middle School has a specimen. It is clear that this bird is a resident on Tsushima.

*59. **Otus japonicus japonicus** Temm. & Schl.

A specimen was obtained by Holst on Tsushima, Oct. 27 (Seebohm, Ibis, 1892, p. 399).

60. **Ninox scutulata scutulata** (Raffles).

Seebohm (Ibis, 1892, p. 250) reported this Owl from Tsushima, Aug. 7. It breeds on the islands. A specimen is preserved in the Tsushima Middle School.

*61. **Cuculus canorus telephonus** Heine.

Three immature specimens were presented by Mr. Kokubu. They were obtained at Kechi, Tsushima, early in the summer of 1920. It is found in the Tsushima Middle School. Very common on Tsushima in summer.

62. **Cuculus optatus optatus** Gould.

One black and another reddish immature bird were presented by Mr. Fukagawa. They were obtained near Izugahara, Tsushima (date unknown). One adult female was shot by Mr. Kokubu and given to me. It was obtained at Kechi, Tsushima, early in the summer of 1920. Very common in summer.

63. **Entomothera coromanda major** (Temm. & Schl.).

An immature specimen was presented by Mr. Fukagawa. It was obtained near Izugahara, Tsushima. There is a specimen in the Tsushima Middle School.

64. **Eurystomus orientalis calonyx** Sharpe.

One adult bird was presented by Mr. Fukagawa. It was obtained near Izugahara, Tsushima (date unknown). It is not uncommon in spring and summer. A specimen is preserved in the Tsushima Middle School. Jouy obtained some specimens on Tsushima, May 24–June 25, 1885 (Clark, *l. c.* p. 161).

65. **Alcedo atthis bengalensis** Gmelin.

Three males, including adult and immature birds, were obtained by Mr. Teraoka on Tsushima, on Oct. 2, 4, 10. Seebohm (Ibis, 1892, p. 95) reported it from the same islands. Some specimens are preserved in the Tsushima Middle School.

66. **Upupa epops saturata** Lönnberg.

An adult specimen was presented by Mr. Fukagawa. It was obtained near Izugahara, Tsushima. The Tsushima Middle School has a specimen of this bird. Dr. Hartert (Vög. pal. Faun. ii. p. 869) reported it from Tsushima. It is probably a spring migrant to the islands.

*67. **Caprimulgus indicus jotaka** (Temm. & Schl.).

There is an example of this Nightjar in the Tsushima Middle School.

*68. **Chætura caudacuta caudacuta** (Latham).

One specimen is preserved in the same school in Tsushima.

69. **Yungipicus kizuki kotataki**, subsp. nov.

Eight specimens were obtained by Mr. Teraoka and others on Tsushima, Oct. 6–19. One female presented by Mr. Kokubu, was collected at Kechi, Tsushima, early in the summer of 1920. The measurements of all Tsushima specimens are as follows:—

Locality.	Date.	Entire culmen	Wing.	Tail.	Tarsus	Sex.
Kechi	Early in summer, 1920	mm. 15	mm. 81·5	mm. 48·5	mm. 15	♀ ad.
Nita-mura (type) ...	6. x. 1920	15	82	50	14	♂ ad.
do. ...	7. x. „	16	86·5	53	14·5	♀ ad.
do. ...	9. x. „	15·5	81	48·5	14·5	♂ ad.
Mitake Forest.....	10. x. „	15	85	51	14·5	♂ ad.
Wakata, Sasu-mura...	19. x. „	15	83·5	50	15	♂ ad.
do. ...	„ „	17	86·5	53	14·5	♀ ad.
Near Izugahara	„ „	16	81·5	47·5	14·5	♂ ad.
do.	„ „	16·5	85	52	14·5	♀ ad.

Messrs. Namiye and Tsuchida obtained six examples of the Pygmy Woodpecker from several localities on Tsushima, between Feb. 19 and March 19, 1891 (Ijima, p. 21). They are preserved now in the Zoological Musuem, Tokyo Imperial University. They measured as follows:—

Sex.	Wing. mm.	Tail. mm.	Tarsus. mm.
♂ ad.	82	50	14
♀ ad.	84	51	15
♀ ad.	85·5	52	14
♀ ad.	86	52	15
♀ ad.	85	51	15
♀ ad.	86	50	15·5

I have carefully compared the above 15 examples with a series of *Y. k. seebohmi* from Hokkaido and Sakhalin, of *Y. k. kizuki* from southern Hondo and Kiusiu, and of *Y. k. nigrescens* from Liu-kiu Islands, and have come to the

conclusion that the Tsushima examples are easily separable from the other forms in the following points :—

The Tsushima example differs from *Y. k. seebohmi* in the coloration of body being very much darker, especially the dark area of upper parts, which is distinctly black, and by the white spots being decidedly smaller. It differs from *Y. k. kizuki* by the upper parts being blacker (not brownish black), especially the mantle, which is almost pure black, only faintly suffused with brown ; also the top of head and nape are darker greyish brown, the ear-coverts darker, the white spots larger and distinctly tinged with olive on the back, and the wing and tail average longer. It also differs from *Y. k. nigrescens* in the general coloration of the upper parts being still blacker, by the white spots being larger, and by the longer tail.

The new form is distinctly larger than *Y. k. kizuki* and *Y. k. nigrescens*. The wing and tail of the last two forms as well as another new form may be tabulated as follows :—

Subspecies.	Sex.	Wing.	Tail.	Locality.	Measured by:
		mm.	mm.		
Y. k. kizuki ...	4 ♂	79–81·5	43–46	S. Hondo & N. Kiusiu	N. Kuroda
	7 ♀	79–83·5	44–47	do.	do.
Y. k. nigrescens.	2 ♂	76–77	42·5–45	Okinawa.	do.
	5 specs.	78–80	...	do.	Hartert.
Y. k. amamii, subsp. nov. Descr. see below	1 ♂	83	46	Amamioshima.	N. Kuroda
	1 ♀	82	46·5	do.	do.
	6 specs.	81–84	...	do.	Hartert.

The number of the white spots on the outer web of the primaries is no doubt variable and is not of much value, but it seems to average 6 spots in *seebohmi*, 5 in *kizuki*, 4–5 in *nigrescens*, and 5–6 (average 6) in the new form from Tsushima (*kotataki*). The coloration on the underside of the new form is not perceptibly different from that of *kizuki*. The dimensions of the wing and tail of *seebohmi* (wing 81–87 mm., tail 47–54 mm.) are almost the same as those of the Tsushima bird. There is also great individual variation in the length of wing in the new form from the same locality, as shown above (wing 81–86·5 mm.).

From the above characters I propose to call the Tsushima bird by the new name, which is derived from the local name of the Woodpecker.

The type-specimen is preserved in my collection. It is an adult male, collected by Mr. N. Teraoka at Nita-mura, Tsushima, 6 October, 1920.

Holst (Seebohm, Ibis, 1892, p. 42) and Jouy (Clark, *l. c.* p. 162) obtained this new form from Tsushima. The Tsushima Middle School has several examples. It is very common in the forest.

I take this opportunity to describe the two following apparently new forms of *Yungipicus* from Japan :—

Yungipicus kizuki amamii, subsp. nov.

Diagnosis.—Very similar to *Y. kizuki nigrescens* of Okinawa, Liu-kiu Islands, but the wing on an average longer. [For measurements see the above table.] It differs from *Y. kizuki kizuki* from Kiusiu by the bill being much broader at the base (breadth of upper mandible at base 8 mm. instead of 6–7 mm.), by the scanty nasal bristles, and by the coloration of body being much darker.

The type-specimen is preserved in my collection. Adult male. Collected on Amamioshima, one of the northern islands of the Liu-kiu group. February 1910.

Yungipicus kizuki nippon, subsp. nov.

Diagnosis.—Very similar to *Y. kizuki seebohmi* of Hokkaido as well as Sakhalin Island, but the white spots on the wing smaller, the white bars on back decidedly narrower, and the white area on the outer tail-feathers smaller. Culmen 15·5 mm., wing 8·5 mm., tail 49 mm., tarsus 13·5 mm.

The type-specimen is from Nakahata, Gotemba, Prov. Suruga, Hondo. Adult male. Collected by myself. 7 April, 1912.

Dr. Stejneger (Proc. U.S. Nat. Mus. ix. 1886, pp. 120–122) considers that examples from Fujiyama and Tate Yama are identical with the Nagasaki bird (the typical *kizuki*). This view is no doubt in error. Specimens from the central Hondo (including Fujiyama and Gotemba, Prov. Suruga) are intermediate between *seebohmi* and *kizuki*. I propose to call the examples by the new name. Specimens from northern Hondo seem to be whiter than in those of the central parts. These specimens are probably stragglers from Hokkaido or Yesso, as already suggested by Dr. Stejneger (Proc. U.S. Nat. Mus. xvi. 1893, p. 629). But this fact is still in question.

I have examined a small series of the Pygmy Woodpecker from Corea and one from Quelpart Island. These examples seem to be identical with the new Hondo form (*nippon*). On the other hand, two specimens from Seven Islands of Izu, Hondo, seem to be separable from the

typical Kiusiu form (*kizuki*) by the longer wing, and to be nearer to the Tsushima example (*kotataki*) than to the Kiusiu form. Further material is needed before these questions can be settled.

70. **Thriponax richardsi** (Tristram).

Mr. Teraoka fortunately shot a fine pair of this splendid Woodpecker at Nita-mura, Tsushima, Oct. 9. They measured as follows :—

Sex.	Culmen. mm.	Wing. mm.	Tail. mm.	Tarsus. mm.
♂ ad.	66	250	181	35
♀ ad.	61	242	175	33·3

I have compared these specimens with four examples from Corea, and have found that there is no tangible difference between them. Messrs. Namiye and Tsuchida obtained it from Tsushima (Ijima, pp. 116–121). Seebohm mentioned it from the same islands (Ibis, 1892, p. 94). It is very rare in the forests of the islands.

*71. **Iynx torquilla japonica** Bonaparte.

One female was collected by Mr. Teraoka at Waniura, Tsushima, Oct. 12. The wing measures 80 mm.

72. **Pitta nympha** Temminck.

Holst (Seebohm, Ibis, 1892, p. 94) obtained this bird from the Tsushima Islands, and Jouy (Clark, *l. c.* p. 160) also collected it from the same islands, 8 June, 1885. This is probably a rare spring or summer visitor to the islands.

*73. **Alauda arvensis japonica** Temm. & Schl.

A specimen is in the Tsushima Middle School. The Lark is undoubtedly a rare bird in the islands.

*74. **Eremophila alpestris euroa** (Thayer & Bangs).

Otocorys alpestris euroa Thayer & Bangs, Proc. N. Engl. Zoöl. Club, v. 1914, p. 43.

One male specimen was shot by Mr. Teraoka at Nita-mura, Tsushima, Oct. 16. Exposed culmen 11 mm., wing 111·5 mm., tail 64·5 mm., tarsus 21 mm. It is no doubt an accidental straggler to the islands.

Thayer and Bangs (*l. c.*) separated this eastern Siberian form from *E. alpestris flava*, the western European form. My measurements are almost the same as those of the typical *europa* from Kolyma, eastern Siberia, except the tail and tarsus, which are somewhat shorter.

75. **Calobates melanope melanope** (Pallas).

Several specimens were obtained by Mr. Teraoka on Tsushima, Oct. 5–18, and a male example was collected by him on Iki Island, Nov. 3. Seebohm reported it from Tsushima (Ibis, 1892, p. 92).

76. **Motacilla alba lugens** Kittlitz.

Ten examples of this Wagtail were shot by Mr. Teraoka on Tsushima, Oct. 21–25, and two females were collected by him on Iki Island, Nov. 1, 3. Dr. Ijima (p. 112) reported it from Tsushima, and Seebohm also mentioned it from the same islands (Ibis, 1892, p. 92).

77. **Motacilla alba leucopsis** Gould.

Messrs. Namiye and Tsuchida obtained a specimen on Tsushima, 24 March, 1891 (Ijima, p. 112).

78. **Anthus trivialis maculatus** Jerdon.

A specimen was obtained by Mr. Teraoka at Sasuna-mura, Oct. 24. Bill from gape 17·5 mm., exposed culmen 11·5 mm., wing 83 mm., tail 62·5 mm., tarsus 21 mm. Seebohm reported it from the same islands (Ibis, 1892, p. 93).

79. **Anthus spinoletta japonicus** Temm. & Schl.

Mr. Teraoka obtained four examples of this form on Tsushima, Oct. 15–25. Dr. Ijima (p. 113) and Seebohm (Ibis, 1892, p. 93) also reported it from Tsushima. Mr. Teraoka first met with this bird on 15 October. It is an autumn visitor to the islands.

80. **Hypsipetes amaurotis amaurotis** (Temminck).

Six examples were obtained by Mr. Teraoka on Tsushima, Oct. 3–27, and a male was collected by him on Iki Island, Nov. 3. These examples agree well with the Hondo specimens before me, as Dr. Ijima has already mentioned

(pp. 107–109). Seebohm (Ibis, 1892, p. 90) reported it from Tsushima. Specimens are also preserved in the Tsushima Middle School. It is one of the commonest birds on the islands, and is said to be more common in winter than in summer. I think some of them are the breeding-birds, but the greater number are winter visitors.

81. **Hypsipetes amaurotis hensoni** (Temminck).

Mr. Clark (*l. c.* p. 74) reported an example of *H. amaurotis hensoni* from Tsushima, 28 May, 1885. I have some doubt whether it was the true *hensoni* or a smaller example of the former form.

82. **Terpsiphone atrocaudata atrocaudata** (Eyton).

A female was obtained by Mr. Teraoka at Nita-mura, Tsushima, Oct. 7.

Seebohm (Ibis, 1892, p. 90) reported that Holst obtained this bird in summer on Tsushima, and Dr. Stejneger (Proc. U.S. Nat. Mus. xxxvii. 1910, p. 653) also mentioned that Jouy collected specimens on the same islands, 6–7 June, 1885. It is clear that this bird migrates to the islands about the end of spring and remains there until early autumn.

83. **Alseonax latirostris** (Raffles).

Seebohm (Ibis, 1892, p. 90) reported this Flycatcher from Tsushima.

84. **Hemichelidon atricapilla tomensis** Johansen.

Hemichelidon sibirica (Gm.).

Seebohm (Ibis, 1892, p. 90) reported this bird from Tsushima.

*85. **Hemichelidon griseisticta** Swinhoe.

An example of this species is preserved in the Tsushima Middle School.

86. **Zanthopygia narcissima narcissima** (Temminck).

Two females and one immature male were obtained by Mr. Teraoka at Nita-mura, Tsushima, Oct. 4–9.

Seebohm (Ibis, 1892, p. 89) reported it from Tsushima. The Tsushima Middle School has specimens of this bird.

87. **Cyanoptila cyanomelana** (Temminck).

Seebohm (Ibis, 1892, p. 89) reported this bird from Tsushima. A male specimen is in the Tsushima Middle School.

88. **Oreocincla dauma aurea** (Holandre).

A specimen is preserved in the Tsushima Middle School.

89. **Turdus eunomus** Temminck.

Dr. Ijima (p. 106) reported this Thrush from the islands of Tsushima and Iki, and Seebohm (Ibis, 1892, p. 88) also recorded it from the former islands. The Tsushima Middle School has specimens.

90. **Turdus naumanni** Temminck.

Dr. Ijima (p. 106) and Seebohm (Ibis, 1892, p. 88) reported this bird from Tsushima. The Tsushima Middle School possesses a specimen.

*91. **Turdus chrysolaus** Temminck.

Seebohm (Ibis, 1892, p. 88) reported this bird from Tshushima.

*92. **Turdus obscurus** Gmelin.

Mr. Teraoka obtained a female specimen at Mitake, Tsushima, Oct. 10.

93. **Turdus pallidus** Gmelin.

Seven specimens were obtained by Mr. Teraoka and myself on Tsushima, Oct. 10–27. Dr. Ijima (p. 106) and Seebohm (Ibis, 1892, p. 88) reported it from Tsushima. Very common in winter on Tsushima.

94. **Monticola solitaria latouchei**, subsp. nov.

Diagnosis.—Similar to *M. solitaria magna* (La Touche) from Japan and Corea, but distinguishable from it by the wing averaging shorter. It differs from *M. solitaria philippensis* (Müller) from Formosa by its longer wing, by its larger and longer bill, and by the longer tarsus.

Measurements of type specimen:—Exposed culmen 22·5 mm., wing 121 mm., tail 76·5 mm., tarsus 30 mm.

The type-specimen is from Sasu-mura, Tsushima. Adult male. Collected by Mr. N. Teraoka. 24 October, 1920.

Differential measurements of three known Japanese and Formosan as well as the new form of the species may be tabulated as follows :—

M. solitaria magna.

Locality.	Sex.	Exposed culmen.	Wing	Tail.	Tarsus.
		mm.	mm.	mm.	mm.
Japan ..	15♂	21–24·5	120–128	79·5–86	29–32·5
„	15♀	21–24·5	117–125	79–86	29·5–32
Corea ..	2♂	23, 24	126, 129	80·5, 82·5	32·5, 32
Dagelet Is., Sea of Japan	3♂	23·5–24·5	123–128·5	82–85	29–31
„	1♀	23·5	123	82	31·5

M. solitaria latouchei, subsp. nov.

Locality.	Sex.	Exposed culmen.	Wing.	Tail.	Tarsus.
		mm.	mm.	mm.	mm.
Tsushima.	6♂	22·5–23	117·5–124	76·5–86	30–31
„	3♀	22–23	116·5–119·5	77·5–79·5	29–30
Iki Isl.	2♀	21, 21	116, 118·5	77, 79·5	30, 32·5

M. solitaria philippensis=manila.

Locality.	Sex.	Exposed culmen.	Wing.	Tail.	Tarsus.
		mm.	mm.	mm.	mm.
Formosa.	1 ♂	20	121·5	82	28·5
„	1 ♀	19·5	110	74	28

Mr. La Touche's measurements of the wing of the two forms are as follows :—

M. solitaria magna.

8 ♂ : 4·8–5·05 in. = 122–127·5 mm.

4 ♀ : 4·62–4·85 in. = 117–122·5 mm.

"The second primary is between the fifth and sixth."

M. solitaria philippensis = manila.

13 ♂ : 4·5–4·76 in. = 114–120·5 mm.

7 ♀ : 4·47–4·6 in. = 112·5–116·5 mm.

"The second primary is either between the fourth and fifth, or equal to or just below the fifth."

The length of wing in the new form (*latouchei*) is shorter than that of *magna*, as given by Mr. La Touche (Bull. B. O. C. xl. 1920, p. 97). I therefore sent the measurements of the new form to Mr. La Touche, then at Mengtsz, Yunnan, for comments. He has kindly written to me as follows :— "I think your Tshushima and Iki Rock-Thrushes are the Chinese *Petrophila manila*. The measurements are those of Chinwangtao birds." But I have compared them with two Formosan examples of *M. solitaria philippensis = manila*, and have found that the Formosan bird is much smaller and shorter in bill ! The Tsushima and Iki birds before me are apparently intermediate forms between true *magna* of Japan proper and *philippensis* from Formosa. In my Tsushima and Iki examples the second primary is between the fifth and sixth, except that one female has its second primary between the fourth and fifth. In one Hondo example the second primary is between the fourth and fifth ! The new form is nearer to *magna* than to *philippensis*.

The subspecific name is given in honour of Mr. J. D. D. La Touche.

Dr. Ijima (p. 106), Seebohm (Ibis, 1892, p. 89), and Mr. Clark (*l. c.* p. 175) reported the Rock-Thrush from Tsushima.

*95. **Calliope calliope** (Pallas).

A male was obtained by Mr. Teraoka at Kuroda, Tsushima, Oct. 25.

96. **Phœnicurus auroreus auroreus** (Pallas).

Mr. Teraoka obtained four specimens at Tsutsu-mura, Tsushima, Oct. 21, and one male at Kujirabuse, Iki, Nov. 3. Seebohm reported it from Tsushima (Ibis, 1892, p. 89). The Tsushima Middle School has specimens. Dr. Ijima (p. 107) reported it from the island of Iki.

97. **Tarsiger cyanurus** (Pallas).

One female was obtained by me at Kuta-mura, Tsushima, Oct. 20, and Mr. Teraoka obtained it from Iki, Nov. 3. Dr. Ijima (p. 107) reported it from Tsushima. Two examples of this species are preserved in the Tsushima Middle School.

98. **Saxicola torquata stejnegeri** (Parrot).

Six specimens were obtained by Mr. Teraoka on Tsushima, Oct. 11–18. Seebohm (Ibis, 1892, p. 89) reported it from the same islands.

99. **Acrocephalus bistrigiceps** Swinhoe.

A female was shot by Mr. Teraoka at Tsutsu-mura, Tsushima, Oct. 21. Holst obtained it from Tsushima (Seebohm, Ibis, 1892, p. 248).

*100. **Urosphena squamiceps** (Swinhoe).

Two specimens were collected by Mr. Teraoka at Nita-mura, Tsushima, Oct. 1, 3.

101. **Horeites cantans cantans** (Temm. & Schl.).

Three specimens were captured by Mr. Teraoka on Tsushima, Oct. 3–26, and four specimens were obtained by him on Iki, Nov. 3. Dr. Ijima (p. 109) and Seebohm (Ibis, 1892, p. 91) reported it from Tsushima.

*102. **Acanthopneuste borealis borealis** (Blasius).

Two specimens were obtained by Mr. Teraoka at Nita-mura, Tsushima, Oct. 2, 4.

*103. **Acanthopneuste borealis xanthodryas** Sw.

Two specimens were obtained by Mr. Teraoka at Nita-mura, Tsushima, Oct. 4, 6.

104. **Acanthopneuste occipitalis coronata** (Temm. & Schl.).

Jouy obtained this form from Tsushima, 28 May, 1885 (Clark, *l. c.* p. 174).

105. **Troglodytes troglodytes utanoi**, subsp. nov.

Diagnosis.—Resembles *T. troglodytes ogawæ* Hartert, but the head only darker, and the rump not darker than the back. It differs from *T. troglodytes fumigatus* by the general coloration of body being distinctly darker, especially on the head. General colour of upper parts very dark brown, with broad and distinct bars; the bars also distinct on the mantle (there are no bars on the mantle in *fumigatus*); lower back and rump somewhat paler coloured than the upper back; upper tail-coverts and tail-feathers tinged with dark rusty, and the bars on them distinct and broad; four small white spots on the middle wing-coverts in the new form, as in *fumigatus* (six in *peninsulæ* of Corea); ear-coverts dark brown and the pale shafts on the ear-coverts rather indistinct; lower parts of the body dark brown, with the centre of the lower breast and abdomen distinctly pale buff; bars on the latter parts very distinct, most of them formed by transverse lines, instead of V-shaped markings as in *fumigatus*; under tail-coverts deep chestnut, with very distinct bars and pure white subterminal spots; in *fumigatus* the white spots are generally on the tips of the feathers of the under tail-coverts.

The type-specimen was obtained by Mr. Y. Utano at Izugahara, Tsushima, 21 December, 1920, and presented to me.

Measurements :—

Locality.	Date.	Exposed culmen.	Wing.	Tail.	Tarsus	Sex.	Collected by
		mm.	mm.	mm.	mm.		
Izugahara, Tsushima (type).	21. xii. 1920	12	50	34·5	16	Ad.	Mr. Utano.
Izugahara, Tsushima.	March 1921	11	44·5	31·5	16	Ad.	do.
do.	„ „	11	48·5	33	17	Ad.	do.
Wakamiyajima, Iki ...	21. xi. 1920	12	45	30	16	ad.	Mr. Teraoka.

The specimen from Iki Island is similar to the type of the subspecies. The subspecific name is given in honour of Mr. Utano.

Seebohm (Ibis, 1892, p. 92) reported this bird from Tsushima as *T. fumigatus*.

*106. **Hirundo rustica gutturalis** Scopoli.

A specimen of this Swallow is preserved in the Tsushima Middle School.

107. **Pericrocotus cinereus cinereus** Lafresnaye.

Seebohm (Ibis, 1892, p. 92) reported this bird as a spring visitor to the islands of Tsushima.

*108. **Bombycilla japonica** (Siebold).

A specimen is in the Tsushima Middle School.

109. **Lanius bucephalus** Temm. & Schl.

Mr. Teraoka obtained a female at Nita-mura, Tsushima, Oct. 2, and he collected a pair of this Shrike at Kujirabuse, Iki Island, Nov. 3. Dr. Ijima (p. 112) and Seebohm (Ibis, 1892, p. 92) reported it from Tsushima. The Tsushima Middle School also has specimens.

110. **Lanius tigrinus** Drapiez.

Jouy obtained this Shrike on Tsushima, 6 June, 1885 (Clark, *t. c.* p. 170).

111. **Lanius cristatus superciliosus** Latham.

Seebohm reported it from Tsushima (Ibis, 1892, p. 92).

*112. **Lanius sphenocercus sphenocercus** Cabanis.

A fine specimen is preserved in the Tsushima Middle School. This is a very remarkable addition to the avifauna of the island.

113. **Parus major quelpartensis** Kuroda.

Nine specimens of this form were obtained by Mr. Teraoka on Tsushima, Oct. 3–28. The colour of the lower parts,

including the flanks, varies from deeper to paler greyish olive ; the upper tail-coverts are paler than in *P. major kagoshimæ* Takatsukasa (' Dobutsugaku Zasshi,' xxxi. 1919, p. 55) from southernmost Kiusiu, but rather deeper than that of the typical Hondo form, *P. major minor*. This Tit ranges from Quelpart Island and Tsushima to the northern parts of Kiusiu (Prov. Chikuzen, etc.). Dr. Ijima (p. 110) and Seebohm (Ibis, 1892, p. 91) mentioned it from Tsushima.

114. **Sittiparus varius ijimæ**, subsp. nov.

Diagnosis.—Very similar to *S. varius yakushimensis* from Yakushima, but the tarsus averages longer and the bill is much thicker. It differs from *S. v. namiyei* of Niijima, Seven Islands, by the under parts being somewhat paler, by the chest having a paler patch, and by the shorter bill. It differs from *S. v. saisiuensis* from Quelpart Island by the deeper coloration of the body, by the side of the face being buffy, not whitish, and by the tarsus averaging shorter. It differs from *S. v. sunsunpi* from Tanegashima by the longer tarsus and by the side of the face not being so white. It also differs from *S. v. varius* from Hondo (probably from Hokkaido) by the under parts being decidedly deeper in colour, by the mantle being very faintly tinged with olive, and by the tarsus averaging longer. It differs essentially from *S. v. owstoni* and *S. v. utsurioensis*.

The type-specimen was obtained by Mr. Teraoka at Nitamura, Tsushima, Oct. 7. It is an adult male, and is preserved in my collection.

Measurements :—6 males : culmen 13–13·5 mm., wing 74·5–79 mm., tail 54–59·5 mm., tarsus 19–20 mm. 5 females : culmen 12·5–13·5 mm., wing 71·5–73·5 mm., tail 50·5–53·5 mm., tarsus 18–19·5 mm.

The new name is given in honour of the late Dr. I. Ijima.

Differential measurements and colour of the parts of the body in the forms of *Sittiparus varius* are as follows :—

Subspecies.	Entire culmen.	Wing.	Tarsus.	Colour of mantle.	Colour of chest.	Colour of side of face.	Locality.
	mm.	mm.	mm.				
1. *S. v. owstoni*	17	74–86	20–21	Distinctly tinged with olive.	Chestnut, with a pale patch.	Chestnut.	Miyakeshima & Hachijioshima.
2. *S. v. utsoriensis* ..	14·5–15	77·5–81	20–22	do.	do.	Pale buffy.	Dagelet Is.
3. *S. v. namiyei*	13·5–14	71–82	20–21	Faintly tinged with olive.	do.	Buffy, deeper than 2.	iishima, Seven Is.
4. *S. v. ijimæ*	12·5–13·5	71·5–79	18–20	Very faintly tinged with olive.	do.	Buffy, ratherpaler than 3 and 5.	Tsushima.
5. *S. v. yakushimensis* .	12·5–13·5	71–77·5	17–19	Without olive tinge.	do.	Buffy, deeper than 2.	Yakushima.
6. *S. v. varius*	12·5–13·5	72–80	16–19	do.	do.	Buffy, in some specimens with whitish.	Hondo and Hokkaido.
7. *S. v. saisiuensis*	12·5 13·5	76–80·5	20·5–21	do.	do.	Average whitish.	Quelpart Is.
8. *S. v. sunsunpi*	12–12·5	72·5–78	17–18·5	Rather deeper, but without olive.	do.	do.	Tanegashima.
9. *S. v.*, subsp. nov.?..	*12	*67	*19	....	do.	....	Okinawajima.
10. *S. v. castaneoventris* .	10	59·5–61·5	14	Uniform.	Deep chestnut.	Whitish.	Formosa.

* Indicates the measurements which were taken by Dr. Stejneger from a specimen.

Specimens from Corea, northern Kiusiu, and Amamioshima were examined by me, but they are too few in number for exact identification. But it seems probable that the example from Corea is almost identical with that of Quelpart Island, though the tarsus is a trifle shorter. A specimen from northern Kiusiu is approximately identical with this new form, though here too the tarsus is a trifle shorter. A specimen from Amamioshima is probably identical with that of Yakushima, one of the southern islands of Kiusiu.

In Tsushima the new form is very common, and no doubt it breeds there. Mr. Clark mentioned it as a common breeding resident on Tsushima (*l. c.* p. 172). Dr. Ijima (p. 110) and Seebohm (Ibis, 1892, p. 91) both reported this Tit from Tsushima. Seebohm and Clark mentioned the species in Corea. It is probably a winter visitor from Japan, but I have specimens of this species from Corea taken during the breeding-season.

115. **Periparus ater teraokai**, subsp. nov.

Diagnosis.—Similar to *P. ater insularis* from Hondo (probably from N. Kiusiu), but the culmen decidedly longer and the coloration of the upper parts deeper. The occipital feathers only 12 mm. long.

The type-specimen was obtained by Mr. Teraoka at Nitamura, Tsushima, Oct. 6. It is an adult male, preserved in my collection.

The subspecific name is given in honour of the collector.

Measurements :—

Locality.	Date.	Entire culmen.	Wing.	Tail.	Tarsus.	Sex.
		mm.	mm.	mm.	mm.	
Nitamura, Tsushima (type)	6. x. 1920	11	60·5	45·5	16·5	♂ ad.
Near Izugahara, Tsushima.	19. x. 1920	11	58	44	15·5	♂ ad.

The lengths of the entire culmens of *P. ater insularis* from Hondo, Kiusiu, and Corea are as follows :—

Locality.	Entire culmen.	Number of specimens examined.
Hondo	9-9·9 mm.	22
Kiusiu	9·5 „	1
Corea	8·5-10 „	9

In none of these specimens does the entire culmen exceed 10 mm.; the culmen reaches 10 mm. in only one Corean male.

Seebohm reported this Tit as *Parus ater pekinensis* from Tsushima (Ibis, 1892, p. 91).

116. **Ægithalos caudatus trivirgatus** (Temm. & Schl.).

Mr. Teraoka obtained eight specimens of this form on Tsushima, Oct. 6–25. All these specimens are the same as Hondo examples. Wings measure 57–62 mm. in length. Holst obtained specimens on Tsushima (Seebohm, Ibis, 1892, p. 91).

117. **Regulus regulus japonensis** Blakiston.

Dr. Ijima (p. 110) and Seebohm (Ibis, 1892, p. 91) reported this bird from Tsushima. Specimens are preserved in the Tsushima Middle School.

118. **Corvus coronoides** Vig. & Horsf. [subsp.?].

Dr. Ijima (pp. 110–112) mentioned the Tsushima form under the name of *Corvus macrorhynchus* Wagl., and he pointed out that it is an intermediate between *C. coronoides japonensis* Bp. from Hondo and *C. coronoides connectens* Stresemann from Loo-choo Is. Mr. Teraoka and I failed to secure a specimen of this interesting form on the islands. More materials are needed before it can bear a new name. This Crow is not so common as the next species.

119. **Corvus corone orientalis** Eversmann.

Four specimens were obtained by Mr. Teraoka and myself on Tsushima, Oct. 23–25, and he collected his examples on Iki Island, Nov. 1. Dr. Ijima (p. 112) and Seebohm (Ibis, 1892, p. 92) reported it from Tsushima. Very common on the islands of Tsushima and Iki.

120. **Frugilegus frugilegus pastinator** (Gould).

Mr. Teraoka obtained one adult and one immature specimen at Tsutsu-mura, Tsushima, Oct. 23. It is a winter visitor from Corea to the islands. Seebohm (Ibis, 1892, p. 92) reported it from Tsushima.

121. **Garrulus glandarius namiyei**, subsp. nov.

Diagnosis.—Very similar to *G. glandarius japonicus* Schlegel from Hondo and Kiusiu, but distinguishable from it by the bill being decidedly thicker and on an average longer.

The type-specimen, an adult female, was obtained by Mr. Teraoka at Nukadake-mura, Tsushima, Oct. 28. It is preserved in my collection.

The subspecific name is given in honour of the late Mr. M. Namiye, who obtained it on Tsushima in 1891.

Measurements :—

Locality.	Date.	Entire culmen	Depth of bill at nostril.	Wing.	Tail.	Tarsus	Sex.
		mm.	mm.	mm.	mm.	mm.	
Nukadake-mura, Tsushima (type).	28. x. 1920	31	13·5	173	149	40	♀ ad
Nita-mura, Tsushima.....	3. x. 1920	31	13	169	148	39·5	♀ ad.
Uchiyama, „	21. ii. 1891	31	13·5	174	148·5	38·5	♀
Kuneinaka, „	6. iii. 1891	30	13·5	178	151	40	♂ ♀
„ „	6. iii. 1891	29·5	13	178	153	39·5	♂ ad.

The length and depth of bill in specimens from Hondo and Kiusiu are as follows :—

Locality.	Entire culmen.	Depth of bill at nostril.	Number of specimens examined.
Hondo....	27·5–32 mm.	11–12·5 mm.	32
Kiusiu....	28–28·5 „	11–12 „	3

In none of these examples does the depth of bill at nostril exceed 12·5 mm. The length of bill also is on an average shorter and under 30 mm., except only in the case of one example reaching 32 mm.

Dr. Ijima (p. 112) and Seebohm (Ibis, 1892, p. 92) reported this Jay from Tsushima. Mr. Clark (*t. c.* p. 167) also reported that Jouy obtained it on the same island, 21 May, 1886. The Tsushima Middle School has specimens. It is a resident on Tsushima.

122. **Zosterops palpebrosa ijimæ** Kuroda.

Eleven specimens were obtained by Mr. Teraoka and myself on Tsushima, Oct. 5–23, and Mr. Teraoka collected a specimen on Iki Island, Oct. 31. The length of the exposed culmen of all the specimens is 12·5 mm. This form ranges from northern Kiusiu (Prov. Chikuzen), Iki, Tsushima, Quelpart, and Dagelet islands to the southern parts of Corea. Dr. Ijima (p. 109), Seebohm (Ibis, 1892, p. 90), and Mr. Clark (*l. c.* p. 166) reported it from Tsushima. It is a very common resident.

*123. **Coccothraustes coccothraustes japonicus** (Temm. & Schl.).

A specimen is preserved in the Tsushima Middle School.

124. **Fringilla montifringilla subcuneolata** Kleinschmidt.

Seebohm (Ibis, 1892, p. 93) reported this bird from Tsushima. A specimen is preserved in the Tsushima Middle School. It probably belongs to this form.

*125. **Chrysomitris spinus** (Linn.).

Two specimens are preserved in the Tsushima Middle School.

126. **Chloris sinica minor** (Temm. & Schl.).

Dr. Ijima (p. 113) and Seebohm (Ibis, 1892, p. 93) reported this Greenfinch from Tsushima. Two specimens are preserved in the Tsushima Middle School.

*127. **Pyrrhula pyrrhula griseiventris** Lafr.

A specimen is preserved in the Tsushima Middle School.

128. **Passer montanus saturatus** Stejneger.

Four specimens of this form of Tree-Sparrow were obtained by Mr. Teraoka on Tsushima, Oct. 25. Dr. Ijima (p. 113) mentioned that it is very abundant near houses, as in Hondo, but I met the Sparrow in very small numbers when I visited the islands. Seebohm (Ibis, 1892, p. 93) reported it from Tsushima.

129. **Emberiza cioides ijimæ** Stejneger.

Eleven specimens of this form were obtained by Mr. Teraoka on Tsushima, Oct. 4–28, and he collected four examples of the same form on Iki Island, Oct. 31 to Nov. 2. I have recently examined a series of specimens of *E. cioides* from Japan, and come to the conclusion that the form (*ijimæ*) ranges over almost all parts of Kiusiu, including Tanegashima, Iki, and Tsushima, as well as Quelpart and Dagelet islands. Specimens from Seven Islands of Izu also seem to me to belong to the present form. The form is distinguishable from *ciopsis* from Hondo and Hokkaido by the ear-coverts being tinged with chestnut and the side of the crown being distinctly reddish chestnut. The form is not found in the peninsula of Corea, where *castaneiceps* occurs. Dr. Ijima (pp. 114–115) and Seebohm (Ibis, 1892, p. 93) reported it from Tsushima.

130. **Emberiza elegans** Temminck.

Eight males were brought back from Tsushima. They were collected Oct. 3–29. Dr. Ijima (p. 116) and Seebohm (Ibis, 1892, p. 94) reported it from the same islands. Very common on the islands. It seems that the female of this species is very scarce.

131. **Emberiza rustica** Pallas.

A female specimen was brought home. It was obtained at Nukadake-mura, Tsushima, Oct. 28. Seebohm (Ibis, 1892, p. 93) reported it from the same islands. It is an autumn and winter visitor.

132. **Emberiza spodocephala personata** Temm.

Dr. Ijima (p. 116) mentioned this form from Tsushima.

133. **Emberiza sulphurata** Temm. & Schl.

Two examples of this species were obtained by Mr. Teraoka on Tsushima, Oct. 23. Seebohm (Ibis, 1892, p. 93) reported it from Tsushima, April 14. It is probably a resident.

134. **Tisa variabilis** (Temminck).

Dr. Ijima (p. 116) mentioned this bird from Iki Island, and Seebohm (Ibis, 1892, p. 94) reported it from Tsushima.

The following species are said to have occurred on Tsushima :—

Dryobates sp.? Mr. Utano's information.

Pica pica sericea Gould. A wanderer from Corea.

Icoturus akahige (Temm.). Mr. Utano's information.

Sitta europæa L. [subsp.?]. Mr. Teraoka met with a Nuthatch.

III.—*A short systematic review of the African Francolins.* By C. W. Mackworth-Praed, M.A., F.Z.S., M.B O.U.

The following is a short review of the Francolins of Africa with particular regard to their distribution and geographical races. I have attempted no identifications of the various species, for their distinctions are in the majority of cases well known, and can be found in any work on the subject. I have, however, indicated the racial differences. The group has not been treated of trinomially before in anything like its entirety, and it will be found that I have adopted a wide view of what constitutes a species.

The material I have had before me has been large, for not only have I had the opportunity of examining that in the British Museum and in Lord Rothschild's Museum at Tring, but also the private collections of Sir Geoffrey Archer, Col. S. R. Clarke, Sir Frederick Jackson, and some part of that of Dr. V. G. L. Van Someren. To all these gentlemen I am greatly indebted. It will be noticed that I have stated under each species the number of specimens examined, and also where they are to be met with, the latter a point of some importance to anyone wishing to know where to find the necessary material for further study of the group. All measurements I have given are those taken by myself, and the localities given in the range of a species are, in most

cases, only those from which I have actually examined specimens.

In Game-Birds such as Francolins, with but short powers of flight, quite small natural features may be hard and fast boundaries, and this naturally leads to the multiplication of racial forms. I have described some few of the most distinct of those which had not been recognised in the Bull. B. O. C. 1920 and elsewhere, but a large number I have merely indicated in this paper. I consider it very desirable that not only should a representative series be at hand before a race is named, but also that some knowledge of its range should be obtained.

I have left all the African Francolins in one genus, though I do not consider it by any means the most correct arrangement, nor must the order in which the species are taken in this paper be considered as reflecting any opinion as to their relationship. Francolins are not easy birds to collect, as the services of a dog are not usually available, and moreover, when secured they too frequently go straight into the pot. This may account for the fact that several species are known either from a single specimen, or have not been met with since their first discovery.

The measurements in all cases are in millimetres.

1 A. **Francolinus lathami lathami** Hartl.

Francolinus lathami Hartlaub, J. f. O. 1884, p. 210: Sierra Leone.

Francolinus peli Temm. Bijdr. tot de Dierk. i. 1854, p. 50: Dabocrom, Gold Coast.

Wing-measurements: ♂ 140–149; ♀ 132–141.

Specimens 51. Brit. Mus. 33. Tring 15. S. R. Clarke 3.

Range. From Gambia through the Gold Coast to Cameroon, Gaboon, and probably part of the Belgian Congo.

1 B. **Francolinus lathami schubotzi** Reichw.

Francolinus lathami schubotzi Reichw. J. f. O. 1912, p. 320: Welle River.

Males similar to those of *F. l. lathami*, but spotting on neck and breast smaller, cheeks whiter, less grey, and abdomen

whiter and more distinctly barred, less brown. Females have a redder tone all over, and the sides of the neck brownish red, not grey. Wings: ♂ 146–150; ♀ 141–148.

Specimens 15. Brit. Mus. 2. Tring 5. Dr. Van Someren 6. Sir F. Jackson 2.

Range. Forests of the Upper Congo watershed and Uganda.

2. **Francolinus nahani** Dub.

Francolinus nahani Dubois, Ann. Mus. Congo, i. 1905, p. 17, pl. x.: Ituri River, Congo.

No known races; the sexes are alike and not unlike the males of *F. lathami* on the underside, but the breast streaked and not spotted. For description of both sexes see Van Someren, Ibis, 1916, p. 220. This species inhabits the same forests as *F. l. schubotzi* in some cases. Wings: ♂ 141–149; ♀ 137–144.

Specimens 16. Brit. Mus. 2. Sir F. Jackson 12. Dr. Van Someren 2.

Range. So far known only from the forests of Uganda and the Ituri River.

3 A. **Francolinus coqui coqui** (Smith).

Perdix coqui Smith, Report Exped. Centr. Afr. 1836, p. 55: Kurrichaine.

Francolinus subtorquatus Smith, Illustr. Zool. S. Afr. 1838, pl. 15 (renaming of above).

? *Francolinus stuhlmanni* Reichw. J. f. O. 1889, p. 270: Usegua.

I cannot separate typical South African specimens from those of Nyasaland, Kenya Colony, or Tanganyika Territory. *Francolinus stuhlmanni* Reichw. is said to have the tail-coverts redder and unbarred, but we have no specimens with those characteristics. Wings: ♂ 137–145; ♀ 126–138.

Specimens 66. Brit. Mus. 53 (type). Tring 9. Sir F. Jackson 1. S. R. Clarke 2. Dr. Van Someren 1.

Range. South Africa north to Rhodesia and Nyasaland, and through Tanganyika Territory to the eastern half of Kenya Colony.

3 B. **Francolinus coqui**, subsp. 1.

Birds from the northern part of Portuguese East Africa are possibly separable by their paler colour, and this is particularly noticeable on the breasts of the females. Wings as in the typical race.

Specimens 4. Brit. Mus. 3. Tring 1.

Range. Mozambique.

3 C. **Francolinus coqui angolensis** Rothschild.

Francolinus coqui angolensis Rothschild, Bull. B. O. C. xii. 1902, p. 76: Bailandu, Angola.

Occasionally though not invariably more heavily barred on the underside than the typical race, but always with greyer, less brown wing-coverts. Wings: ♂ 140–148; ♀ 131–133.

Specimens 7. Tring 7 (type).

Range. Angola.

3 D. **Francolinus coqui**, subsp. 2.

Birds from S.W. Uganda appear to be not quite typical, being rather bright coloured and with white not buff throats. Wings as in the typical race.

Specimens 12. Brit. Mus. 7. Sir F. Jackson 5.

Range. South-western Uganda.

3 E. **Francolinus coqui hubbardi** O.-Grant.

Francolinus hubbardi Ogilvie-Grant, Bull. B. O. C. iv. 1895, p. xxvii: Nassa, Victoria Nyanza.

This may very well prove to be a distinct species. It differs from all other races of *F. coqui* in having an unbarred lower breast and belly. Wings: ♂ 140–153; ♀ 137–141.

Specimens 24. Brit. Mus. 9 (type). Sir F. Jackson 10. Dr. Van Someren 2. Tring 2. S. R. Clarke 1.

Range. From the shore of Victoria Nyanza eastwards to about Naivasha in Kenya Colony.

3 F. **Francolinus coqui schlegeli** Heugl.

Francolinus schlegelii Heuglin, J. f. O. 1863, p. 275: Bongo River, Bahr el Ghazal.

A drawing of the type of this Francolin is in the British Museum, and shows a bird very similar to *F. c. coqui* except that the shoulders and wing-coverts are uniform light reddish brown, and the barring on the underside is somewhat finer. This bird has never been rediscovered, and only one specimen appears to be in existence.

Specimens; none examined.

Range. Bahr el Ghazal (? formerly).

3 G. **Francolinus coqui buckleyi** O.-Grant.

Francolinus buckleyi Ogilvie-Grant, Ibis, 1892, p. 41: Accra, Gold Coast (ex Shelley MSS.).

There is considerable doubt as to what the birds named above are. All our specimens are females and they are like *F. c. coqui*, except that the barring on the underside is less in extent and much finer. They may be the females of *F. c. schlegeli*, for the female of that race is unknown. They may be a distinct race of *F. coqui*, as named above. They may also be, as Dr. Hartert has suggested, females of *F. albogularis* Gray. With regard to that I can only say that there are in the British Museum females of *F. albogularis* which are exactly like the males, and also females which approach these birds very closely. It is a very pretty problem and one which the field-naturalist must settle. Wings of above specimens: ♀ 124–128.

Specimens 4. Brit. Mus. 3 (types). Tring 1.

4. **Francolinus streptophorus** O.-Grant.

Francolinus streptophorus Ogilvie-Grant, Ibis, 1891, p. 126: Mt. Elgon.

No races distinguished. Some specimens, notably from Kavirondo, are very grey, but it does not seem a constant local character. Wings: ♂ 152–161; ♀ 152–158.

Specimens 21. Brit. Mus. 4 (type). Sir F. Jackson 10. Tring 3. S. R. Clarke 3. Dr. Van Someren 1.

Range. From Mt. Elgon to the Kavirondo country of Kenya Colony and to Acholi in Uganda.

5. Francolinus sephæna.

Under this heading come a large group of Francolins which extend over most of southern and eastern Africa. They show considerable local variation, and as in many groups, the names bestowed on them in various places do not by any means correspond to the most clearly marked differences of plumage. They appear to be best grouped as follows:—

5 A. Francolinus sephæna sephæna (Smith).

Perdix sephæna Smith, Report Exp. Centr. Africa, 1836, p. 55: Marikwa, *i.e.* Marico River, Transvaal.

Francolinus pileatus Smith, Illustr. Zool. S. Africa, 1838, pl. 14 (renaming of above).

The largest race of the group. Wings: ♂ 162–172; ♀ 156–162. There is one remarkably small specimen in the Tring Museum, a male with a wing of 156.

Specimens 18. Brit. Mus. 11 (type). Tring 7.

Range. Transvaal, Bechuanaland, Lake Ngami, etc.

5 B. Francolinus sephæna zambesiæ.

Francolinus sephæna zambesiæ Praëd, Bull. B. O. C. xl. 1920, p. 140: Mesanangue, Zambesi River.

Very like preceding race in colour, but smaller.

Wings: ♂ 153–159; ♀ 148–155.

Specimens 8. Brit. Mus. 8 (type).

Range. Zambesia, *i.e.* inland and northern Portuguese East Africa and the adjoining parts of Rhodesia.

5 C. Francolinus sephæna, subsp. 1 & 2.

There are two birds at Tring and one in the British Museum from the South-West African Protetorate, and they differ considerably from one another. I am inclined to think that more material will show that there are two races in that part of Africa, a northern extending into Angola, and a southern from Damaraland.

These southern races of *F. sephæna* all stand apart from the eastern and north-eastern forms in that the breast is spotted and not only the neck.

5 D. **Francolinus sephæna rovuma** Gray.

Francolinus rovuma Gray, List Gall. Brit. Mus. 6 Mch. 1867, p. 52 : Rovuma River.

Francolinus kirkii Hartlaub, P. Z. S. 14 Nov. 1867, p. 827: Zanzibar.

Spotting confined to the throat. Feathers of flanks and belly with strong longitudinal chestnut stripes on the end of the shaft. A very dark coloured race with blackish patches on the back. Should this form ever be found within the limits of the previously mentioned races—and I do not consider it impossible—then those races must be treated as a distinct species-group.

Specimens 11. Brit. Mus. 5 (2 types). Dr. Van Someren 6.

Range. Coasts of Tanganyika Territory and northern Portuguese East Africa.

Note.—This race has been unfortunate in its choice of type-localities. Gray founded his *F. rovuma* on specimens of two races, one from 'Rovuma,' the other a bird labelled 'E. Africa,' which looks like an inland race. However, the Rovuma specimen can be taken as the type, and the name, which has eight months' precedence of Hartlaub's, can stand. Hartlaub chose as his type-locality Zanzibar, but the bird does not apparently occur there at the present day, and there are some doubts as to whether it ever did.

5 E. **Francolinus sephæna granti** Hartl.

Francolinus granti Hartlaub, P. Z. S. 1865, p. 665: Unjamwezi, Tanganyika Territory.

Francolinus ochrogaster Hartlaub, J. f. O. 1882, p. 327: Upper Nile.

Francolinus granti delutescens Mearns, Smiths. Misc. Coll. lvi. 1911, No. 20, p. 3 : Base of Mt. Kenya.

It is very difficult indeed to say what local forms are worthy of recognition within eastern and east-central Africa. The one thing is certain that the greater the material the less does any given character appear locally constant. I personally propose to unite under the above heading all birds from the northern half of Tanganyika Territory, all

birds from Kenya Colony, except the most northern and coastal portions, and all from Uganda and the Lado Enclave.

This race is characterised by being ochreous beneath with various degrees of mottling, and in the coastal part of its range it has occasional longitudinal chestnut stripes reminiscent of, though never as definite as, *F. s. rovuma*. Wings: ♂ 140–148; ♀ 132–145.

Specimens 64. Brit. Mus. 27. Tring 10. Sir F. Jackson 10. Dr. Van Someren 12. S. R. Clarke 5.

Range. As above.

5 F. **Francolinus sephæna**, subsp. 3.

This is a small pale desert race of which the distribution is as yet ill-defined. It is the palest form known, but I have not sufficient material to justify naming it. It has never any sign of striping on the underside. Wings: ♂ 140–148.

Specimens 6. Brit. Mus. 2. Sir F. Jackson 3. S. R. Clarke 1.

Range. Northern Guaso Nyiro to Marsabit and westwards to south of Lake Rudolf.

5 G. **Francolinus sephæna**, subsp. 4.

This is a larger race and has consistent though narrow striping on the underside. It is obviously an intermediate race between the last and *F. s. spilogaster* of Somaliland and eastern Abyssinia, and as such it appears hardly worthy of a name. Wings: ♂ 149–160; ♀ 138–140.

Specimens 7. Sir F. Jackson 7.

Range. At present only known from the extreme northern boundary of Kenya Colony (Moyale, Wajheir, etc.). It will probably be found to extend northwards and grade into *F. s. spilogaster* Salvadori.

5 H. **Francolinus sephæna jubaënsis** Zedlitz.

Francolinus sephæna jubaënsis Zedlitz, Orn. Monats. 1913, p. 59: Afgoi, southern Italian Somaliland.

The smallest form of *F. sephæna*. It is scarcely separable in colour from *F. s. granti*, though as a rule it is somewhat greyer on the back. Little or no signs of striping on the

underside. At its southern limit near Lamu it appears to be found together with typical *F. s. granti*, and they no doubt intergrade. Wings: ♂ 135–142; ♀ 130–136.

Specimens 14. Brit. Mus. 4. Dr. Van Someren 8. Sir F. Jackson 1. Tring 1.

Range. Coast of southern Italian Somaliland and as far south as Lamu.

51. **Francolinus sephæna schoanus** Heugl.

Francolinus schoensis Heuglin in Petermann's Mittheil. 1869, p. 415: Shoa (nom. nud.).

Francolinus schoanus Heuglin, Orn. Nord-Ost-Afr. iii. 1873, p. 891: Shoa.

Size larger than in *F. s. granti*, but otherwise apparently indistinguishable. Never any striping beneath. Wings: ♂ 147–156; ♀ 147–8.

Specimens 30. Brit. Mus. 14. Tring 16.

Range. Most of Abyssinia, except the eastern portion.

51. **Francolinus sephæna spilogaster** Salvadori.

Francolinus spilogaster Salvadori, Ann. Mus. Civ. Genova, vi. 1888, p. 541: Harar.

A still larger race and almost invariably striped on the underside. The only specimens lacking stripes are some collected by Sir G. F. Archer at the summit of the Goolis Range in British Somaliland. Wings: ♂ 155–165; ♀ 149–158.

Specimens 28. Brit. Mus. 16. S. R. Clarke 7. Sir G. F. Archer 4. Tring 1.

Range. Harar and eastern Abyssinia, and British Somaliland.

6. **Francolinus icteropus** Heugl.

Francolinus icteropus Heuglin, Sitzb. Ak. Wien, 1856, p. 303 (nom. nud.); J. f. O. 1862, p. 412 (1st descr.): Southern slopes of the high mountains of Semien, alt. 10,000–11,000 ft.

Francolinus icteropus Hartlaub, P. Z. S. 1865, pl. 39.

This species is only known from the type, which has

apparently been lost, and from the plate in the Proc. Zool. Soc. 1865. The plate shows a bird of something of the nature of *F. sephœna*, but which is too distinct to be considered a race of it. The striping on the underside is most pronounced and is continued in the form of spots and horse-shoes on to the flanks. The plate is based on an original drawing by Heuglin.

Specimens. None now in existence.

Range. Mountains of Semien, northern Abyssinia.

7 A. **Francolinus albogularis albogularis** Gray.

Francolinus albogularis Gray, List Gall. iii. 1844, p. 35: Gambia (nom. nud.); Hartlaub, J. f. O. 1854, p. 210 (1st descr.).

A paler race, breast pale yellow-buff with traces of black cross-bars on the feathers. Wings: ♂ ♀ 129–133.

Specimens 6. Brit. Mus. 5 (type). Tring 1.

Range. Gambia, and probably southwards to the limits of the next race.

7 B. **Francolinus albogularis gambagæ** Praed.

Francolinus albogularis gambagæ Praed, Bull. B. O. C. xl. 1920, p. 140: Gambaga, Gold Coast Hinterland.

Like the last race, but with the throat and breast feathers strongly edged with rufous, and with more rufous above and below the eye. Wings: ♂ ♀ 125–135.

Specimens 10. Brit. Mus. 8 (type). Tring 2.

Range. Gold Coast Hinterland and parts of Northern Nigeria.

Note.—The sexes of *F. albogularis* are apparently alike, but see remarks under *F. coqui buckleyi*.

8. **Francolinus africanus.**

Under this heading come a large and varied group of Francolins extending from the Cape to Eritrea. I have refrained from naming any more races, but I expect that with more material South African ornithologists will recognise two or three races within the Union, and more may probably be found in the northern part of their range. The northern group is at first sight very distinct by reason of their plainer

undersides, but on examination they are found to grade into forms as heavily marked beneath as the typical race. Over most of its range, this is a high-ground Francolin.

8 A. **Francolinus africanus africanus** Steph.

Perdix afra Lath. (nec Müll.) Ind. Orn. ii. 1790, p. 648 : Cape of Good Hope.

Perdix perlata Temm. Pig. et Gall. iii. 1815, pp. 326, 721 (part).

Francolinus africanus Steph. in Shaw's Gen. Zool. xi. 1819, p. 323 : country of the Hottentots, *i.e.* Western Cape Province.

A rather dull coloured and small race, with the undersurface of dingy-white and black, and the white, irregular, not in round spots. Wings : ♂ 151–157 ; ♀ 145.

Specimens 4. Brit. Mus. 4.

Range. Confined to the Knysna, Cape Town, and Stellenbosch districts.

8 B. **Francolinus africanus**, subsp. 1.

Somewhat similar in colour to the typical race, but rather more sharply marked and considerably larger. Wings : ♂ 163–168 ; ♀ 159–163.

Specimens 13. Brit. Mus. 13.

Range. Deelfontein and central Cape Province.

8 C. **Francolinus africanus**, subsp. 2.

Considerably greyer and cleaner on both upper and under surfaces. Underside marked in clean white and black and the white mainly in round spots. Wings : ♂ 167 ; ♀ 165–167.

Specimens 3. Brit. Mus. 3.

Range. Little Namaqualand.

8 D. **Francolinus africanus**, subsp. 3.

A good deal yellower on both surfaces than any of the preceding races. In young birds this characteristic is very marked, and the most eastern, *i.e.* Natal, birds are the yellowest of all. Wings : ♂ 158–163 ; ♀ 158–159.

Specimens 9. Brit. Mus. 7. S. R. Clarke 2.

Range. Transvaal, Orange Free State Province, and Natal.

8 E. **Francolinus africanus uluensis** O.-Grant.

Francolinus uluensis Ogilvie-Grant, Ibis, 1892, p. 44: Ulu country, Kenya Colony.

There is a large gap in the distribution of *F. africanus*, this race being separated from the last by a very wide area from which the species has not been reported. In plumage, however, this race is on the upperside almost indistinguishable from the typical race, while below the breast is more heavily barred and spotted, and the edges of the feathers are mottled, not plain blue-grey. Wings: ♂ 159–166; ♀ 157–165.

Specimens 32. Brit. Mus. 12 (type). Sir F. Jackson 4. S. R. Clarke 5. Tring 9. Dr. Van Someren 2.

Range. Kenya Colony, mainly the highlands, but has been reported from the Taveta country at the base of Kilimanjaro.

8 F. **Francolinus africanus lorti** Sharpe.

Francolinus lorti Sharpe, Ibis, 1898, p. 425, pl. x.: Wagga, Somaliland.

At first sight this bird appears to belong to quite a different group, but on examination it becomes clear that the difference is merely due to the fact that the mottling and cross-barring of the breast-feathers have become obsolete, and only the longitudinal streaks are left. Throat white. Wings: ♂ 159–173; ♀ 165–170.

Specimens 12. Brit. Mus. 3 (type). Sir G. F. Archer 5. S. R. Clarke 4.

Range. Golis Range and Warsangli country of British Somaliland. Now very rare, if not extinct, in the former locality. The Warsangli birds are whiter on the underside than the type, but this may be due to the freshness of the skins.

8 G. **Francolinus africanus gutturalis** (Rüpp.).

Perdix gutturalis Rüpp. Neue Wirb. 1835, p. 13: Halai, Axum, Temben in Tigré, N. Abyssinia.

Above not unlike *F. a. lorti*, but below more strongly marked, with more red on the feathers of the breast and

sides and with the black striping much stronger. Throat slightly spotted. Wings: ♂ 165–170; ♀ 158–165.

Specimens 7. Brit. Mus. 7.

Range. Tigré, N. Abyssinia.

8 H. **Francolinus africanus eritreæ** Zedl.

Francolinus gutturalis eritreæ Zedlitz, J. f. O. 1910, p. 357: Asmara, Eritrea.

Closely allied to the last race. I have seen no examples from the type-locality and so cannot say how well marked the differences may be. Three birds from Keren in the Tring Museum I cannot differentiate from *F. a. gutturalis*. For details and distinctions see Zedlitz, *op. cit.*

Specimens. None examined.

Range. Eritrea.

8 I. **Francolinus africanus spilolæmus** Gray.

Francolinus psilolæmus Gray, List Gall. 1867, p. 50: Shoa.

This race resembles *F. a. gutturalis*, but the black markings on the feathers of the underside are replaced by broad red ones. Throat closely spotted. Wings: ♂ 164–167; ♀ 164.

Specimens 5. Brit. Mus. 5 (type).

Range. Shoa.

8 J. **Francolinus africanus ellenbecki** Erl.

Francolinus africanus ellenbecki Erlanger, J. f. O. 1905, p. 151: S. Arussi-Gallaland.

Said to be like the last race, but to be greyer, less brown above, and darker grey below. Size apparently similar.

Specimens. None examined.

Range. South Arussi-Gallaland to the Boran country.

9 A. **Francolinus castaneicollis castaneicollis** Salvad.

Francolinus castaneicollis Salvadori, Ann. Mus. Civ. Genova, 1888, p. 542: Lake Ciar Ciar = Chercher, Shoa.

It is unfortunate that the type of this species came from Lake Chercher as that locality is on the dividing line of two races, the Lake District birds and the Harar district birds. It is therefore difficult to say to which the name should be

more properly assigned. I have here kept it distinct from both races, but I am inclined to think that it will eventually replace *F. c. bottegi* Salvad. from the Lake District. Unfortunately there is only one specimen available from Lake Chercher. Wing: ♀ 192.

Specimens 1. Brit. Mus. 1.

9 B. **Francolinus castaneicollis bottegi** Salvad.

Francolinus bottegi Salvadori, Ann. Mus. Civ. Gen. 1898, p. 652: Burgi in Badditu.

Closely allied to the last race and possibly identical. It appears, however, to be brighter above and duskier below than in our single specimen of the typical race. Wings: ♂ 215–232; ♀ 192–196.

Specimens 9. Tring 9.

Range. Badditu and Djam-Djam on the south-eastern side of the Abyssinian Lake District.

9 C. **Francolinus castaneicollis**, subsp. 1.

This is the other race to which the name '*castaneicollis*' may possibly apply. It differs from the Badditu birds by having less white marking on the back, and the upperside is generally duskier and less brown, while the chestnut of the neck is somewhat paler. Wings: ♂ 220–228; ♀ 188–198.

Specimens 4. Brit. Mus. 4.

Range. Harar district eastwards, where it merges into the next race.

9 D. **Francolinus castaneicollis ogoënsis** Praed.

Francolinus castaneicollis ogoënsis Praed, Bull. B. O C. xl. p. 141: Sheikh Pass, Ogo, British Somaliland.

Differs from all other races of *F. castaneicollis* by the pronounced greyness of the upperside, the feathers of the mantle being paler and the chestnut of the neck duller, almost grey-brown. Wings: ♂ 212–222; ♀ 188–192.

Specimens 14. Sir G. F. Archer 6. S. R. Clarke 6 (type). Tring 2.

Range. British Somaliland.

9 E. **Francolinus castaneicollis gofanus** Neum.

Francolinus castaneicollis gofanus Neum. J. f. O. 1904, p. 353 : Gadat, in Gofa.

A very dark and richly-coloured race. Head bright chestnut, rump and upper tail-coverts particularly dark. Wings : ♂ 220–229 ; ♀ 195–205.

Specimens 13. Tring 10 (type). Brit. Mus. 3.

Range. Gofa and Kullo, to the north-west of the Abyssinian Lake District.

9 F. **Francolinus castaneicollis**, subsp. 2.

This is a very distinct-looking form, and I regret that I have not enough material to justify naming it. A bright chestnut head as in the last race, but the back almost plain olive-brown. Pale feathers of underside yellowish, not white. Female—possibly not adult—like the male but duller, with the back greyer and more mottled, and the feathers of the underside with little or no red and with large grey centres. Wings : ♂ 226 (worn) ; ♀ 183 (*vix ad?*).

Specimens 2. S. R. Clarke 2.

Range. South-western Abyssinia, west of the range of the last race. These two specimens came from 'Margee.'

10 A. **Francolinus shelleyi shelleyi** O.-Grant.

Francolinus shelleyi Ogilvie-Grant, Ibis, 1890, p. 348 : Umvuli River, Mashonaland.

I cannot see any distinction between birds from the Transvaal, Nyasaland, or southern Uganda. *F. shelleyi* is a low-ground bushveld bird, which is naturally less likely to vary than a bird which is confined to isolated patches of high ground. Wings : ♂ 163–182 ; ♀ 162–170.

Specimens 39. Brit. Mus. 33 (type). Tring 6.

Range. Mashonaland, Natal, Zululand, southern Nyasaland, most of Rhodesia and south-western Uganda.

10 B. **Francolinus shelleyi trothæ** Reichw.

Francolinus shelleyi var. *trothæ* Reichw. Vög. Afr. i. 1901, p. 490 : Ugalla, Tanganyika Territory.

This race, which is apparently described from a single

specimen, is stated to have, among other distinctions, the red-brown spots on the crop and sides darker, and to be greyer on the back. I have seen no material from Tanganyika Territory.

Specimens. None examined.

Range. Ugalla, and possibly elsewhere in Tanganyika Territory.

10 c. **Francolinus shelleyi whytei** Neum.

Francolinus whytei Neum. Bull. B. O. C. xxi. 1908, p. 76 : Nyika Plateau, Nyasaland.

Possibly a high-ground race of *F. shelleyi*, equally possibly a full species. Barring of underside reduced to narrow V-like markings; throat buff, not white. Wing : ♀ 162.

Specimens 1. Brit. Mus. 1 (type).

Range. Nyika Plateau of Nyasaland. "Bare ridges of short grass at high elevations."

Note.—There is a bird in the Tring Museum from Mt. Milanji which may be of this race, but which is very dark and with a larger bill. It is more than possible that high ground in Rhodesia may produce a bird of this type as well. I am inclined to think that these birds will prove to be specifically distinct from the low-ground *F. shelleyi*.

11. **Francolinus elgonensis** O.-Grant.

Francolinus elgonensis Ogilvie-Grant, Ibis, 1891, p. 126 : Mt. Elgon.

Possibly allied to *F. shelleyi*, but with the under surface russet-brown, and with the barring narrow and obsolete, often brown instead of black. Feathers of crown dark with rufous tips. Wings : ♂ 178–183; ♀ 176.

Specimens 6. Brit. Mus. 3 (type). Sir F. Jackson 3.

Range. Mt. Elgon, between 7700 and 1100 ft.

12 a. **Francolinus levaillanti levaillanti** (Valenc.).

Perdix levaillanti Valenc. Dict. Sci. Nat. xxxviii. 1825, p. 441 : Cape.

Perdix levaillantoides Smith, Rep. Exp. Centr. Afr. 1836, p. 55 : "Country towards sources of Orange River."

Underside ochreous-buff, breast and side feathers blotched with red, but never with black. Wings : ♂ 165–175 ; ♀ 162–173.

Specimens 38. Brit. Mus. 31. Tring 6. S. R. Clarke 1.

Range. Cape Colony, Transvaal, Natal, etc.

12 B. **Francolinus levaillanti benguellensis** Neum.

Francolinus levaillanti benguellensis Neum. Bull. B. O. C. xxi. 1908, p. 44 : Cuima, Benguella.

Smaller and paler than the typical race and with the red blotches on the feathers of the underside replaced by black ones. Wing : ♀ 157.

Specimens 1. Tring 1 (type).

Range. Benguella.

12 C. **Francolinus levaillanti crawshayi** O.-Grant.

Francolinus crawshayi Ogilvie-Grant, Ibis, 1896, p. 482 : Nyika Plateau, Nyasaland.

Like *F. l. levaillanti*, but whiter on the lower throat and paler on the belly, which has black or very dark brown blotches ; not unlike *F. l. benguellensis*, but with a whiter throat and a redder crop. Wing : ♂ 166.

Specimens 1. Brit. Mus. 1 (type).

Range. Nyika Plateau, Nyasaland, at 7000 ft.

12 D. **Francolinus levaillanti mulemæ** O.-Grant.

Francolinus mulemæ Ogilvie-Grant, Bull. B. O. C. xiv. 1903, p. 30 : Mulema, Uganda.

Francolinus adolfi-frederici Reichw. Orn. Monats. 1908, p. 48 : N.E. Ruanda.

Very like the last race and possibly identical, but the lower throat-patch not so white and the spotting on the underside bolder. Wings : ♂ 164–173 ; ♀ 157–167.

Specimens 45. Brit. Mus. 14 (type). Sir F. Jackson 21. S. R. Clarke 6. Tring 3. Dr. Van Someren 1.

Range. Uganda and Ruanda.

12 E. **Francolinus levaillanti kikuyuensis** O.-Grant.

Francolinus kikuyuensis Ogilvie-Grant, Bull. B. O. C. vi. 1897, p. xxiii : " Kikuyu District " in error. The bird does not occur in Kikuyu and the type came from El Doret.

I am very doubtful as to the status of this bird. The difference between it and *F. l. mulemæ* is that the underside is strongly rufous and the throat-patch rufous all over. Dr. Van Someren, however, could never find this bird, and he showed me some absolutely typical specimens of *F. l. mulemæ* from the actual type-locality of this bird. It may therefore prove to be merely a rufous phase of *F. l. mulemæ*. Wings : ♂ 170–179.

Specimens 4. Brit. Mus. 1 (type). Sir F. Jackson 3.

Range. Nandi and Mau, Kenya Colony, at 7000–8000 ft.

13. **Francolinus finschi** Boc.

Francolinus finschi Bocage, Orn. Angola, 1881, p. 406 : Benguella.

A distinct species probably allied to *F. levaillanti*. The whole of the black and white feathering of *F. levaillanti* is replaced by a delicate blue-grey, and this colour extends as a wash over most of the bird. Wing : ♂ 175.

Specimens 2. Tring 2.

Range. Benguella.

14 A. **Francolinus gariepensis gariepensis** Smith.

Francolinus gariepensis Smith, Illustr. Zool. S. Afr. 1849, pls. 83, 84: " Source of Vaal River," *i.e.* Source of Caledon River in northern Basutoland.

The phases and races of *F. gariepensis* are by no means clear, and a good deal more material is necessary, especially from Damaraland. To start with, in some specimens, and in both the types, the feathers of the underside have well-defined black margins, and such birds appear to be also the largest in size. The typical race is more richly coloured and more heavily spotted beneath than the other races. Wings: ♂ 160–175 ; ♀ 160–169.

Specimens 19. Brit. Mus. 16 (types). S. R. Clarke 2. Tring 1.

Range. Southern Transvaal and Orange Free State Province.*

14 B. **Francolinus gariepensis pallidior** Neum.

Francolinus jugularis pallidior Neum. Bull. B. O. C. xxi. 1908, p. 45 : South of Cunene River, S.W. Africa.

Paler and more sparsely spotted on the underside than in the typical race. Wings : ♂ 167–176 ; ♀ 160–162.

Specimens 9. Tring 1 (type). Brit. Mus. 8.

Range. Damaraland, but to an unknown extent.

Note.—There are two birds from Tsumeb, S.W. Africa, in the British Museum, which are still paler in ground-colour and have the black feather-margins as in the types of *F. g. gariepensis.* They have also a crop-patch of white feathers edged with black, in this respect and in ground-colour resembling the next race.

14 C. **Francolinus gariepensis jugularis** Bütt.

Francolinus jugularis Büttikofer, Notes Leyden Mus. xi. 1889, pp. 76, 77, pl. iv. : Gambos, Southern Angola.

This is the palest race with a noticeable crop-patch of black-edged white feathers. The ranges of this and the last race are not clear. Of the four specimens examined, two from Catumbella are extremely pale and presumably typical, the other two, merely labelled 'Benguella,' are hardly, if at all, distinguishable from *F. g. pallidior.* It is quite within the bounds of possibility that *F. jugularis* is a different species to *F. gariepensis*, and that a race of each inhabits the same areas. Wings of present race : ♂ 156–160 ; ♀ 147.

Specimens 4. Brit. Mus. 4.

Range. Gambos, and elsewhere in Angola; limits unknown.*

15. **Francolinus adspersus** Waterh.

Francolinus adspersus Waterhouse, in Alexander's Exped. ii. 1838, p. 267 : Damaraland.

* See note at the end of the paper.

No races known. Wings : ♂ 177–187 ; ♀ 170–180.

Specimens 14. Brit. Mus. 8. Tring 6.

Range. Damaraland, southern Angola, and the Upper Zambesi.

16. **Francolinus capensis** (Gmel.).

Tetrao capensis Gmelin, Syst. Nat. i. 1788, p. 759 : Cape Colony.

Perdix clamator Temm. Pig. et Gall. iii. 1815, pp. 298, 717 : Cape.

Francolinus clamata Steph. in Shaw's Gen. Zool. 1819, p. 327 (misspelling of Temminck's name).

Perdix clamosus Less. Traité d'Orn. 1831, p. 504, pl. 87 : Cape.

No races known. Wings : ♂ 215–225 ; ♀ 192–212.

Specimens 14. Brit. Mus. 13. Tring 1.

Range. Cape Colony.

17 A. **Francolinus natalensis natalensis** Smith.

Francolinus natalensis Smith, S. Afr. Journ. (2) 1833, p. 48 : Natal.

Perdix lechoho Smith, Rep. Exp. Centr. Afr. 1836, p. 54 : Marikwa and Limpopo Rivers.

Above browner, below more thickly marked ; markings always black and white, or very dusky and white, in both sexes and at all ages. Wings : ♂ 183–185 ; ♀ 163–178.

Specimens 18. Brit. Mus. 13 (type). Tring 5.

Range. Natal, Swaziland, Transvaal.

17 B. **Francolinus natalensis neavei** Praed.

Francolinus natalensis neavei Praed, Bull. B. O. C. xl. 1920, p. 140 : East bank of Loangwa River.

Male slightly greyer above than in the typical race, below less thickly marked but markings bolder. Female very distinct, sparsely marked below as in the male, but markings brown, and with a brownish-rufous wash over all the underside This is even more noticeable in the young, and

suggests affinities with the *F. hildebrandti* group, in which the sexes are very different. Wings: ♂ 165; ♀ 162.

Specimens 6. Brit. Mus. 6 (type).

Range. N.E. Rhodesia. Two young birds from the Kafue River also appear to belong to this race.

18. **Francolinus harwoodi** Blund. & Lovat.

Francolinus harwoodi Blundell & Lovat, Bull. B. O. C. x 1899, p. 22 : Ahaia Fej, Shoa.

Probably most nearly allied to *F. natalensis* and somewhat reminiscent of that species in appearance. Only known from the type. Wing: ♂ 182.

Specimens 1. Brit. Mus. (type).

Range. Shoa.

19 A. **Francolinus bicalcaratus bicalaratus** (Linn.).

Tetrao bicalcaratus Linn. Syst. Nat. 12th ed. i. 1766, p. 277: Senegal.

Perdix senegalensis Bonn. Tabl. Enc. Méthod. i. 1791, p. 212, pl. 93 : Senegal.

Perdix adansonii Temm. Pig. et Gall. iii. 1815, pp. 305, 717: Senegal (renaming).

Francolinus albiscapus Reichenbach, Handb. Gall. 1853, figs. 1753–4.

Somewhat paler, and less closely marked below. Wings: ♂ 167–187; ♀ 165–173.

Specimens 45. Brit. Mus. 28. Tring 17.

Range. Senegal, Gambia, Portuguese Guinea, Gold Coast Hinterland and possibly coast as well, Northern Nigeria.

19 B. **Francolinus bicalcaratus thornei** O.-Grant.

Francolinus thornei Ogilvie-Grant, Bull. B. O. C. xiii. 1899, p. 22 : Sierra Leone.

Darker on the back than the typical race, and more densely-marked below. The type-specimen is abnormal and has no rufous at all below. Wings: ♂ 170–190; ♀ 164–177.

Specimens 22. Brit. Mus. 16 (type). Tring 6.

Range. Liberia and Sierra Leone.

19 c. **Francolinus bicalcaratus adamauæ** Neum.

Francolinus bicalcaratus adamauæ Neum. Orn. Monats. xxiii. 1915, p. 73 : Adamaua, Cameroon.

For the distinctions of this race see Neumann's original description. There are no specimens available from the type-locality, except one at Tring, and the locality of that is doubtful; it does not appear to differ from the last race.

Specimens. None examined.

Note.—There are in the British Museum two specimens from the Manenguba Mts., Cameroon, which are more sparsely marked below than in *F. b. thornei*. Material from more localities in Cameroon would be of interest.

19 d. **Francolinus bicalcaratus ayesha** Hartert.

Francolinus bicalcaratus ayesha Hartert, Nov. Zool. xxiv. 1917, p. 291.

More rufous above than the typical race and more densely marked below. Wings : ♂ 190.

Specimens 2. Tring 1 (type). Brit. Mus. 1.

Range. Morocco.

20 a. **Francolinus icterorhynchus icterorhynchus** Heugl.

Francolinus icterorhynchus Heuglin, J. f. O. 1863, p. 275 : Bongo River, Bahr el Ghazal.

? *Francolinus dybowskii* Oust. Natur. 1892, p. 232 : Ubangi River.

Somewhat smaller, less heavily marked on the underside. Wings : ♂ 163–173 ; ♀ 156–169.

Specimens 13. Brit. Mus. 13.

Range. Bahr el Ghazal, and possibly the Upper Welle and Ubangi Rivers.

20 b. **Francolinus icterorhynchus emini** Neum.

Francolinus icterorhynchus emini Neum. Orn. Monats. 1907, p. 198 : West of Lake Albert.

Francolinus grisescens Mearns, Smiths. Misc. Coll. lvi. 1911, No. 20, p. 3 : Lokko Zegga, Lake Albert.

Larger, spotting on underside generally heavier and larger,

more stripes on the breast. Wings: ♂ 180–188; ♀ 169–175.

Specimens 33. Brit. Mus. 8. Sir F. Jackson 12. Tring 13.

Range. Uganda and the Lado Enclave.

21. **Francolinus ugandensis** Neum.

Francolinus ugandensis Neum. Orn. Monats. 1907, p. 199: Mondo, Uganda.

A bird of very doubtful status. It is like *F. i. emini*, but it has the red-brown markings on the underside of *F. clappertoni gedgei*. It may be a hybrid, or it may be merely a phase of *F. i. emini*. I do not for a moment think it is a true species, but I have no means of disproving that it is. Wing: ♂ 185.

Specimens 2. Tring 1 (type). Sir F. Jackson 1.

Range. Uganda.

22 A. **Francolinus clappertoni clappertoni** Child.

Francolinus clappertoni Children in Denham & Clapperton's Travels, Appendix xxi. 1826, p. 198: Bornu.

Above pale and sandy, below well marked, the feathers with a brown centre on a buffish-white ground. Wings: ♂ 188–191; ♀ 173–182.

Specimens 17. Brit. Mus. 14 (type). Tring 3.

Range. Bornu to Kordofan.*

22 B. **Francolinus clappertoni**, subsp. 1.

Intermediate between the typical race and the next; above greyer, less brown, below feathers with a blackish-brown centre on a white ground. Wings: ♂ 189–195; ♀ 181.

Specimens 7. Brit. Mus. 6. S. R. Clarke 1.

Range. From the neighbourhood of El Duem, along the White Nile to Renk.*

22 C. **Francolinus clappertoni heuglini** Neum.

Francolinus clappertoni heuglini Neum. Orn. Monats. 1907, p. 199: Meshra-el-Rek.

A good deal darker, above grey not brown, below feathers

* See note at the end of the paper.

with broader black-brown centres on a white or buffish-white ground. Wings: ♂ 183–191; ♀ 167–180.

Specimens 18. Brit. Mus. 18.

Range. From somewhere just north of Fashoda to the sudd region of the Upper White Nile Province and the eastern Bahr el Ghazal.

22 D. **Francolinus clappertoni**, subsp. 2.

Intermediate between *F. c. clappertoni* from the west, *F. c. heuglini* from the north, and *F. c. gedgei* from the south. Above browner than *F. c. heuglini* and not so grey, but not so dark as *F. c. gedgei*. Below much like the last race, but ground-colour possibly yellower, not so white. Wings: ♂ 183–191.

Specimens 6. Brit. Mus. 4. S. R. Clarke 2.

Range. From the sudd region to Uganda.

22 E. **Francolinus clappertoni gedgei** O.-Grant.

Francolinus gedgii Ogilvie-Grant, Ibis, 1891, p. 124: Plains at foot of Mt. Elgon.

Above very dark, but dark brown not dark grey, below as in the last race. Wing: ♂ 197.

Specimens 1. Brit. Mus. (type).

Range. Mt. Elgon district, and probably elsewhere in Uganda.

22 F. **Francolinus clappertoni sharpei** O.-Grant.

Francolinus sharpii Ogilvie-Grant, Ibis, 1892, p. 47: Bogosland, Abyssinia, etc.

The next two races form a group somewhat distinct from the other forms of *F. clappertoni*, and might be regarded as a distinct species. It is quite probable that they will prove to be so. Feathers of breast and throat harder looking and more cleanly cut, with a pale brown centre in a white-edged black V. Above browner with buffish-white edges to the feathers. Wings: ♂ 182–190; ♀ 169–177.

Specimens 30. Brit. Mus. 12 (type). Tring 17. S. R. Clarke 1.

Range. Bogosland and Abyssinia south to Lake Zwai.

22 G. **Francolinus clappertoni königseggi** Mad.

Francolinus königseggi Madarasz, Ann. Mus. Nat. Hung. xiii. 1915, p. 560 : Semsir, Dinder River.

I have seen no birds from the type-locality, nor is Madarasz's type available, so it is somewhat of a speculation when I assign Blue Nile birds to this race. They differ from *F. c. sharpei* by being slightly smaller, and the feathers of the chest have darker brown centres. Wings : ♂ 178–182 ; ♀ 168. It is quite probable that Madarasz's birds are more sharply distinct in these characters than the specimens examined, which are all from the Blue Nile.

Specimens 5. Brit. Mus. 5.

Range. The Sennar Province of the Sudan and possibly parts of Kassala.

23. **Francolinus nigrosquamatus** Neum.

Francolinus nigrosquamatus Neum. Orn. Monats. 1902, p. 8 : Middle Omo River.

Somewhat similar to *F. c. sharpei*, but feathers of chest and back with all the centres black and the feathering not giving such a squamate appearance. Small, and reminiscent of a very black *F. icterorhynchus*. Wing : ♀ 141.

Specimens 1. Tring (type).

Range. Middle reaches of the Omo River.

24. **Francolinus hartlaubi** Boc.

Francolinus hartlaubi Bocage, Jorn. Sci. Lisbon, ii. 1869, p. 350 : Mossamedes.

From its description somewhat allied to the foregoing group, but no specimens are available.

Specimens. None examined.

Range. Angola.

25 A. **Francolinus hildebrandti hildebrandti** Cab.

Francolinus hildebrandti Cabanis, J. f. O. 1878, p. 206, pl. 4 : (Zanzibar?), Mombasa, and further inland.

? *Francolinus fischeri* Reichw. J. f. O. 1887, p. 51 : Ussere, Wembere Steppes, N.E. of Tabora.

Male dark and closely marked on the underside, spots

rounded. Female—which is in this group totally unlike the male—rich reddish brown, chest and under parts of uniform colour. Wings: ♂ 180–185; ♀ 167–180.

Specimens 10. Brit. Mus. 8. Tring 2.

Range. Kilimanjaro district and inland, limits unknown.

25 B. **Francolinus hildebrandti altumi** Fischer & Reichw.

Francolinus altumi Fischer & Reichw. J. f. O. 1884, p. 179, pl. 2: Naivasha, Kenya Colony.

Slightly larger, male darker above than in the typical race, female paler below and greyer above, chest distinctly spotted. Some specimens from Narossara and the southern parts of Kenya Colony are intermediate with the last race. Wings: ♂ 190–198; ♀ 175–183.

Specimens 30. Brit. Mus. 5. Tring 15. Sir F. Jackson 9. S. R. Clarke 1.

Range. Highlands of Kenya Colony.

Note.—One bird, sexed male and with large spurs, from Narossara in Col. S. R. Clarke's collection, is in typical adult female plumage.

25 C. **Francolinus hildebrandti helleri** Mearns.

Francolinus hildebrandti helleri Mearns, P. U.S. Nat. Mus. xlviii. 1915, p. 381: Mt. Lololokwi, northern Kenya Colony.

This race from an isolated mountain in northern Kenya Colony is said to differ from *F. h. altumi*. Male redder brown above and with more white below, female more olive-brown, less greyish. Wings: ♂ 188; ♀ 170.

Specimens. None examined.

Range. Only known from the type-locality.

25 D. **Francolinus hildebrandti johnstoni** Shelley.

Francolinus johnstoni Shelley, Ibis, 1894, p. 24: Milanji Hills, Nyasaland.

Male as in the typical race but less thickly marked below, and the markings forming stripes not spots. Female quite distinct, duller and browner on the underside. Wings: ♂ 176–183; ♀ 166–174.

Specimens 11. Brit. Mus. 10 (type). Tring 1.

Range. Milanji District, Nyasaland, and apparently the southern inland half of Tanganyika Territory, at least birds from Mahenge are indistinguishable.

25 E. **Francolinus hildebrandti lindi** Praed.

Francolinus hildebrandti lindi Praed, Bull. B. O. C. xli. 1921, p. 111.

A well-defined race differing from all others in the great reduction of the black stripes on the underside, which in consequence presents a very white appearance. Female unknown. Wing: ♂ 174.

Specimens 1. Brit. Mus. (type).

Range. Coastal area of southern Tanganyika Territory.*

25 F. **Francolinus hildebrandti**, subsp. 1.

This race, though widely separated geographically, appears to be in every way identical with the typical form. It may be found later that this form occurs throughout the northern half of Tanganyika Territory, but at present no material is available. Wings: ♂ 180–188; ♀ 165–172.

Specimens 11. Brit. Mus. 11.

Range. Nyika Plateau of Northern Nyasaland.

26 A. **Francolinus squamatus squamatus** Cass.

Francolinus squamatus Cassin, Proc. Acad. Phil. viii. 1857, p. 321: Cape Lopez, Gaboon.

Francolinus petiti Bocage, Jorn. Sci. Lisbon, vii. 1879, p. 68: Landana, Portuguese Congo.

Francolinus modestus Cabanis, J. f. O. 1889, p. 89: Chinchoxo, Portuguese Congo.

The typical race cannot be confused with any other and has up to the present been usually treated as a separate species. Feathers of underside without large dark centres and giving a squamate appearance. Wings: ♂ 178–195; ♀ 164–177.

Specimens 28. Brit. Mus. 15. Tring 13.

Range. Cameroon to Portuguese Congo.

* See note at the end of the paper.

26 B. **Francolinus squamatus schuetti.**

Francolinus schuetti Cabanis, J. f. O. 1880, p. 351 : Lunda, Angola-Congo boundary.

There are no specimens available, and in consequence it is impossible to define the range of this race, nor can it be determined whether or not it is separable from the Uganda and Kivu birds which are the nearest in point of locality. I propose here to limit this race to the typical locality only.

Specimens. None examined.

Range. Lunda, Angola-Congo boundary.

26 C. **Francolinus squamatus**, subsp. 1.

Two birds collected by Ansorge at Degama, Southern Nigeria, appear to be intermediate between *F. s. squamatus* and the other races, the dark centres of the feathers of the underside being comparatively small. Male very grey ; female much mottled and vermiculated above and below. Wings : ♂ 176 ; ♀ 177.

Specimens 2. Tring 2.

Range. Degama, and probably elsewhere in Southern Nigeria.

26 D. **Francolinus squamatus zappeyi** Mearns.

Francolinus schuetti zappeyi Mearns, Smiths. Misc. Coll. lvi. 1911, No. 20, p. 4 : east shore of Victoria Nyanza.

Feathers of underside with dark centres, but the dark and light colour more contrasted. Wings : ♂ 170–185 : ♀ 155–167.

Specimens 39. Brit. Mus. 16. Sir F. Jackson 13. Tring 9. S. R. Clarke 1.

Range. Uganda to the Kivu District and round the Lake to Kavirondo.

26 E. **Francolinus squamatus dowashanus**? Mad.

Francolinus dowashanus Madarasz, Ann. Mus. Nat. Hung. xiii. 1915, p. 394 : Ngare Dowash.

Unfortunately there appears to be no copy of the Ann. Mus. Nat. Hung. 1915 available in this country. I am

consequently unable to compare our birds, which are from the Loita Plains not far away, with Madarasz's description. In these, the dark feather centres and almost white margins offer a very strong contrast.

Specimens 3. S. R. Clarke 2. Dr. Van Someren 1.

Range. Kenya Colony—Tanganyika Territory boundary, south of the Loita Plains.

26 F. **Francolinus squamatus**, subsp. 2.

In colour close to *F. s. zappeyi*, but distinctly larger. Apparently confined to high ground. Wings: ♂ 192–198.

Specimens 5. Sir F. Jackson 3. Dr. Van Someren 2.

Range. Mau, Ravine, Laikipia, etc., in Kenya Colony.

26 G. **Francolinus squamatus mavanensis** Mearns.

Francolinus schuetti mavanensis Mearns, Smiths. Misc. Coll. lvi. 1910, No. 14, p. 1: Kilimanjaro.

Francolinus schuetti kapitensis Mearns, Smiths. Misc. Coll. lvi. 1910, No. 14, p. 2: Juja, Kenya Colony.

Francolinus schuetti keniensis Mearns, Smiths. Misc. Coll. lvi. 1910, No. 14, p. 2: Nyeri, Kenya Colony.

This is a duller duskier race in which the colours of the feathers of the underside do not contrast but coalesce. I can in no way separate Kilimanjaro specimens from those of Kenya or of the Athi Plains near Juja. Wings: ♂ 175–195: ♀ 163–180.

Specimens 24. Brit. Mus. 12. Tring 10. S. R. Clarke 1. Sir F. Jackson 1.

Range. Kilimanjaro, Kikuyu, Fort Hall, Aberdare Mts., Kenya, Solai, etc.

Note.—I am here compelled to state my most emphatic opinion that Mearns's specimens did not justify him in attempting anything like the close subdivision he adopted in dealing with this species. His distinctions when analysed are mostly attributable to age or sex. It is with regret that I am forced to this conclusion, but I have no doubt that more material will bring ornithologists to the same view.

26 H. **Francolinus squamatus**, subsp. 3.

Two birds from Lake Zwai in southern Abyssinia seem somewhat distinct. They are very pale on the underside, and above they are mottled with a good deal of grey edging to the feathers. More material would be of interest. Wings: ♀ 173–175.

Specimens 2. Brit. Mus. 1. Tring 1.

Range. Lake Zwai, southern Abyssinia.

27 A. **Francolinus ahantensis ahantensis** Temm.

Francolinus ahantensis Temm. Bijdr. tot de Dierk. i. 1854, p. 49, pl. 14 : Ahanta, Gold Coast.

This species is allied to *F. squamatus*, and the race of it which occurs in Abyssinia shows decidedly intermediate features. This, the typical race, is greyer and more distinctly marked. Wings: ♂ 176–192 ; ♀ 167–173.

Specimens 15. Brit. Mus. 13. Tring 2.

Range. Gold Coast, Sierra Leone, Portuguese Guinea, Gambia, etc.

27 B. **Francolinus ahantensis tetraoninus** Blund. & Lovat.

Francolinus tetraoninus Blundell & Lovat, Bull. B. O. C. x. 1899, p. 22 : Mendi, N.W. Abyssinia.

Somewhat intermediate in appearance between the last race and the eastern races of *F. squamatus*. Breast-feathers with narrow whitish sides, giving a striped appearance. Above much mottled but not so grey as the last race. Wing: ♀ 170.

Specimens 1. Brit. Mus. (type).

Range. North-western Abyssinia.

28. **Francolinus camerunensis** Alex.

Francolinus camerunensis Alexander, Bull. B. O. C. xxv. 1909, p. 12 : Cameroon Mountain.

In spite of what has been written to the contrary, it appears that the sexes of this species are alike, thus justifying Mr. Bannerman's views (*cf.* Ibis, 1915, p. 481). No known races. Wings: ♂ 182 ; ♀ 164–178.

Specimens 4. Brit. Mus. 4 (type).

Range. Cameroon Mountain.

29. **Francolinus griseostriatus** O.-Grant.

Francolinus griseostriatus Ogilvie-Grant, Ibis, 1890, p. 349, pl. 10 : Quanza River.

No known races. Wings : ♂ 150–168 ; ♀ 151–158.

Specimens 13. Brit. Mus. 8 (type). Tring 5.

Range. Angola.

30. **Francolinus nobilis** Reichw.

Francolinus nobilis Reichw. Orn. Monats. xvi. 1908, p. 81 : Wirunga Volcanoes, Kivu District.

No known races.

Specimens. None examined.

Range. Kivu District.

31. **Francolinus jacksoni** O.-Grant.

Francolinus jacksoni Ogilvie-Grant, Ibis, 1891, p. 123 : Mianzini, Kenya Colony.

No known races. Wings : ♂ 220–230 ; ♀ 201–212.

Specimens 21. Brit. Mus. 12 (type). Sir F. Jackson 5. Tring 3. S. R. Clarke 1.

Range. Highlands of Kenya Colony, Kikuyu, Aberdare Mts., Kenya, Naivasha, Laikipia, etc.

32 A. **Francolinus erckeli erckeli** (Rüpp.).

Perdix erckeli Rüpp. Neue Wirb. 1835, p. 12 : Taranta Mts., N.E. Abyssinia.

The typical race is darker, browner, and more richly coloured. Wings : ♂ 223–231 ; ♀ 191–211.

Specimens 29. Brit. Mus. 19. Tring 8. S. R. Clarke 2.

Range. Eastern, southern, and central Abyssinia.

32 B. **Francolinus erckeli**, subsp. 1.

An intermediate race, geographically and in appearance, between the typical race and the next. Hardly distinct enough from either to justify naming. Wings : ♂ 228 ; ♀ 195–209.

Specimens 5. Tring 5.

Range. Eritrea.

32 c. **Francolinus erckeli pentoni** Praed.

Francolinus erckeli pentoni Praed, Bull. B. O. C. xl. 1920, p. 141 : Erkowit.

Considerably paler and greyer. Wings : ♂ 228–233 ; ♀ 196–211.

Specimens 16. Brit. Mus. 13 (type). Tring 3.

Range. The neighbourhood of Erkowit in the Red Sea Province of the Sudan.

Note.—Since this paper was written, I have had the opportunity of glancing through the later numbers of the 'Journal für Ornithologie' which were not available to me before, and I note three new Francolins described therein. The first, *Francolinus tschadensis* Reichw. J. f. O. 1919, p. 334, from the Lake Chad District, is a race of *F. clappertoni* which corresponds in description with the bird I call *F. clappertoni*, subsp. 1, from the White Nile between El Duem and Renk. It may well prove to be a westward extension of this race along the edge of the area of greater rainfall.

The second, *Francolinus grotei* Reichw. J. f. O. 1919, p. 334 : Mikindani, is almost undoubtedly the bird I have recently described as *Francolinus hildebrandti lindi,* Bull. B. O. C. xli. 1921, p. 111. The description does not tally exactly with my single specimen, but I have little doubt it is the same and that Reichenow's name must stand.

The third is *Francolinus gariepensis ludwigi* O. Neumann, J. f. O. 1920, p. 79 : Middelburg, Transvaal. This appears from its description to be a well-marked race, but I have no specimens available at the moment from the northern Transvaal. A single bird from near Vryburg is distinctly paler and greyer on the crop feathers than typical examples.

IV.—*A Reminiscence of the last great flight of the Passenger Pigeon* (Ectopistes migratorius) *in Canada.* By Percy R. Lowe, from information derived from Dr. A. B. Welford of Woodstock, Ontario, Canada.

On one of the hot days of last July there walked into the Bird-room of the British Museum a gentleman from Woodstock, Ontario, in Canada. This was Doctor A. B. Welford, who had not been to England for forty years, and in his hand he bore a fine skin of a Passenger Pigeon which he wished to present to the Museum. Almost at the last moment of leaving his home for England, he had packed it in one of his trunks—a happy thought,—for although it had been well preserved in his house as a precious relic of one of the most remarkable phenomena in the history of birds and was in fact, in a very excellent state of preservation, such relics are perhaps safer in an institution like the British Museum. Gratefully as we accepted Dr. Welford's gift, we were still more grateful for the very interesting account which the donor gave us of his own personal experience of the last great flight of the Passenger Pigeon. It must be getting a rare event, nowadays, to listen to the story of a man who had actually witnessed one of the last devastating flights of this remarkable bird, and as we listened, wholly absorbed, I came to the conclusion that such a story was too good to be lost in the hazy limbo of mere hearsay recollection. I therefore asked Dr. Welford if he would kindly jot down for publication a few notes as to the main facts and incidents of his experience, and here they are, woven into what I think is a story which may well interest the readers of 'The Ibis.'

* * * * * *

"The Passenger Pigeon which I have presented to the British Museum of Natural History was shot by me in the spring-flight (April) of 1870 (about), near Woodstock in Ontario. I am not absolutely clear as to the year or

month, but I feel fairly sure that it was April. I remember too, that it was a Monday, for there had been a large flight on the preceding day, and I can well recollect regretting that it was a Sunday, as we had up till then never seen such an unusual flight; although, as it turned out, this was only the advance guard.

For many years previously there had of course taken place the usual spring-flights from the south, but no one in those days remembered ever having seen anything comparable to the prodigious flight which occurred in the spring of 1869 or 1870. In previous years, if we had a bag of eight or ten a day it was considered good shooting, unless indeed one had had the fortune to be quietly lying in wait in the wood when a large flock alighted in one's immediate neighbourhood. On such a lucky occasion the flock would always first alight in the trees, and the birds would commence their sweet plaintive calls, which were very similar to those of the domestic pigeon but with a very much prettier trill and accentuation, and a curious ventriloquial effect. After calling in this way for some time, a few birds, emboldened by the apparent peace and safety, would fly down to the ground, quickly followed by more and more, until hundreds or the entire flock would soon be searching for the beech-nuts on or under the fallen leaves. It was, as I have said, on these fortunate occasions that one might get fifteen to twenty-five birds with a double shot just as they rose *en masse* from the ground, but as a rule I was quite content with ten birds in a day's shooting, and sometimes got none. Moreover, in the years previous to the big flight, the pigeons used to be very shy and difficult to approach, for usually the trees and undergrowth had not begun to put forth their leaves, and the birds, like wild geese, seemed to have a habit of putting out sentinels, so that when these flew away the entire flock would be off.

On the particular Monday of which I write the birds came over in incredible numbers, some idea of which may be gained by what happened to me personally.

I was up that morning very early, and so were the birds. I had taken up a position on the top of some rising ground, behind a rail or small fence which ran along the edge of a wood in which were growing some beech trees which supplied the favourite food of the pigeons. The beech-nuts had been lying covered with snow all through the winter, but were now exposed. Between the spot where I stood and another large wood was a small open clearing or meadow. By this time the air was black with flock upon flock of pigeons all going eastward. Some were flying high, but others just cleared the wood in front of me, and then swooping down to the meadow, flew very close to the ground, so close indeed that it was necessary for them to rise before clearing the low fence in front of me. This was my opportunity: and as they cleared the fence, so I fired into wave upon wave.

They came on in such numbers that thousands would pass between the discharge of my double-barrelled gun and its reloading—a longer process then, in the days of muzzle-loaders, than now. At about 10 A.M., not being in the least prepared for such phenomenal slaughter, I ran out of powder and shot, having then 400 birds to my credit, during the shooting of which it was not unusual to get from 15 to 25 with a "right and left." Being now unable to do any more shooting until I had secured more ammunition I hurried home, a distance of 1½ miles, got a horse and light waggon, returned to the scene of my battue with some grain-bags holding one and a half bushels of ordinary grain, filled them with the pigeons and made tracks for my home again. All the time I was filling the sacks the birds were still streaming low over the fence, so that before leaving I hid myself behind it, and taking a long slender cedar rail knocked down many more as they came over.

This, however, to my then youthful notions, did not appeal so much as shooting, so that, after dropping my birds at home, I drove into town (Woodstock, Ontario) for more powder and shot and caps, a distance of 3½ miles. During

the entire drive there and back, flocks of millions of pigeons were filling the air and shadowing the sun like clouds. The roar of their wings resembled low rumbling thunder, and the shooting from scores of guns could be heard for miles resounding from wood to wood like a small mimic battle.

This great flight continued from before daylight to dusk and lasted for some days, gradually lessening until the flight was over.

Each succeeding year for several years ordinary flights continued, but in greatly reduced numbers, until they ceased altogether."

* * * * * *

Such in substance and fact is Dr. Welford's written statement, and his account of this wonderful flight corresponds in every essential particular with the story which he told on the spur of the moment to Mr. Kinnear and myself. What, we may well ask, is the explanation of this swift and tumultuous passing of the Passenger Pigeon, of this final orgy or riot of reproductive energy?

We may think of something akin to an abnormal stimulation or feverish exhaustion of the germ plasm, but how that over-stimulation arose, if it ever existed, it would be difficult to say. There seems, for instance, no evidence to suggest that it was due to an abnormal supply of food, and if it had been it would have affected other species of the family. We may fancifully compare it to the last flaring up of the dying spark of life in a race which was already doomed and approaching its end, or to a final and resplendent *finale* to the original creative impulse with which the species was launched from the "family tree" to run its inevitable course upon the face of the earth. We may think of it as a race whose germ-potency had, so to speak, "outrun the constable," like so many other races we have knowledge of in past geological ages; but instead of running to fantastic sizes, as in the case of so many of the reptiles whose doom was sealed,

it rioted in a spendthrift revelry of numbers, which led to exhaustion and extinction. We may, if it so pleases us, surmise that its vital mechanism had, for some cause or other, simply burnt itself out, or that there was some sudden alteration in the sex-ratio; but whatever we choose to think, there are I believe two causes at least for which there would appear to be a very justifiable doubt as to their being the actual determining factors leading to the total and final disappearance of the Passenger Pigeon from this planet. One of them is a microbic infection, the other the machinations of man, wholesale as the latter were. If it had been the first, there would have been abundant and patent evidence available, and as to the second the probabilities seem all against such an idea; for if the Passenger Pigeon had not, for some reason which we cannot yet fathom, been doomed to disappear utterly and finally, we should surely have witnessed small scattered populations still holding out in such places where chance and protection afforded them the opportunity.

Doubtless there will be not a few who will dissent. It will be pointed out that the Passenger Pigeon was a food-migrant, that it did not continue in one place, thereby militating against its preservation in specially protected areas. But its migrations were the result of its immense hordes and consequent scarcity of food in any one locality, and we can scarcely believe that a small colony amply provided with a sufficiency of beech-nuts, acorns, and other provender would have left their breeding-grounds for the mere lust of wandering. Other objections, too, may be advanced, such as the facilities, especially in former times in the States, for indiscriminate shooting, just when the fate of the species was apparently trembling in the balance. Yet in spite of all such objections, in spite of the untold slaughter of thousands upon thousands by every means, legal and illegal, I still imagine we have not yet fathomed the secret of this pigeon's complete extermination.

V.—*A note on some Oriental Zosteropidæ, and descriptions of new Subspecies.* By E. C. Stuart Baker, M.B.O.U.

The genus *Zosterops* is one which it is extremely difficult to place. It has external and superficial characters which would seem to ally it with many other families, but these are accompanied by so many other contradictory characters,—at least, in so far as our Oriental species are concerned,—that it appears advisable to place the genus in a family by itself.

In the Oriental species of *Zosterops* the bill is slender and small, about half the length of the head; the culmen is curved throughout its length, the edges of the commissure smooth, and the nostrils are covered with a large membrane; the tarsi are fairly strong and stout but not adapted for terrestrial habits; the tongue is protractile and furnished with two brushes of curiously stiff, horny fibres.

The wing is long, the first primary very minute but always visible with a glass. The tail is short and square, varying in comparative length in different species.

The genus in its entirety is represented by a large number of species in Australia, Asia, and Africa, in tropical regions, and the species and subspecies so run into one another that it is extremely difficult to decide what status many of the forms should bear to each other. Much remains still to be done in this respect, and the following is merely an attempt to define the forms found in the Indian Empire or immediately connected therewith.

There seem to be four species which may be discriminated fairly easily, subspecies of these being found breeding in the same area. These four appear to me to be :—

1. *Zosterops palpebrosa.*
2. *Zosterops ceylonensis.*
3. *Zosterops aureiventer.*
4. *Zosterops siamensis.*

The breeding areas of these overlap as follows. 1 and 2 breed together in the lower ranges of the Ceylon mountains.

1 and 3 breed together in the central parts of Burma and in the north of the Malay Peninsula, and 1, 3 and 4 are found together on various parts of Burma, Siam, Yunnan, etc., in the same areas.

The following key may suffice to define the species.

Key to Species.

A. Chin and throat yellow.
  a. Abdomen entirely grey, or with a mere trace of yellow. Tail long, 33–37 mm., and black suffused with green ..... *Z. palpebrosa.*
  b. Abdomen with yellow central streak. Tail short, 30–32 mm., practically black ..... *Z. aureiventer.*
  c. Abdomen yellow all over ..... *Z. siamensis.*
B. Chin and throat dark greenish yellow ..... *Z. ceylonensis.*

Z. palpebrosa extends throughout India and Ceylon, the greater part of Burma, the north of the Malay Peninsula, Siam, Yunnan, and practically throughout southern China.

Z. ceylonensis is confined to Ceylon.

Z. aureiventer extends from Java, Sumatra, Borneo, through the Malay Peninsula, E. Pegu, Karennee to the Kachin Hills.

Z. siamensis is found in central and southern Burma, Siam, and Cochin-China.

The form of *Z. palpebrosa* found in the hills south of the Brahmaputra is very close to *Z. aureiventer*, but has the long, greenish tail of the former and must be retained in that species.

I recognize the following species and subspecies within, or adjacent to, the Indian area.

ZOSTEROPS PALPEBROSA.

(1) **Zosterops palpebrosa palpebrosa.**—*Sylvia palpebrosa* Temm. Pl. Col. 293, fig. 3, 1824: Bengal.

The type is a dark bird with wing of 54 mm. and bill of 11 mm., and evidently belongs to the southern, not the northern form. In 1824 Orissa formed a part of Bengal as did Chota Nagpore, and it is evident the bird came from one

of these places, and I therefore designate Orissa as the restricted type-locality.

Measurements : wing 52–57 ; bill 11–12 mm.

Distribution. Bengal, Orissa, E. Central Provinces and southern India, including all the hilly country from Mysore southwards, east and west.

(2) **Zosterops palpebrosa elwesi**, subsp. nov.

Very much brighter above, and more yellow and less olive-green ; also paler below.

Measurements : wing 49–53 mm. ; bill 8–9·5 mm. (in one 10 mm.).

Distribution. W. Central Provinces, Rajputana, N.W. India and Himalayas to W. Assam, N. Shan States, and Kauri Kachen Hills.

Type : unsexed, Sikkim, 1876 ; Elwes Coll. Tring Museum.

(3) **Zosterops palpebrosa egregia** Madarasz, Ann. Mus. Budapest, ix. 1911, p. 422, pl. xvi. fig. 1 : Ceylon.

Below very pale, almost albescent ; above much as the last.

Measurements : wing 54–56 mm. ; bill 9–10 mm.

Distribution. Ceylon only.

(4) **Zosterops palpebrosa cacharensis**, subsp. nov.

Resembles typical *palpebrosa* closely, but is smaller and almost invariably has a distinct yellow streak down the centre of the abdomen. In this respect it closely resembles the pale southern form of *aureiventer*, but it has the long greenish-black tail of *palpebrosa*.

Measurements : wing 49–54 mm. ; bill 9–10 mm.

Distribution. Assam, south of the Brahmaputra, Manipur, Lushai, Chittagong, Chin Hills.

Type. ♂, 7.12.95 ; Gunjong, N. Cachar ; Baker Coll. Tring Museum.

(5) **Zosterops palpebrosa peguensis**, subsp. nov.

Nearest to *Z. p. simplex* from Amoy, China, but distinguishable at a glance by its much darker coloration, of a

more olive, less golden tint. The Tenasserim birds, six in number, in the collection of the British Museum are distinctly more olive than those from other parts of Burma, but are very close to them, and for the time I keep all the Burmese birds under the one name. The throat of this race is a very pale, almost lemon yellow.

Measurements: wing 53–58 mm., bill 9·0 to 10 mm.

Distribution. Southern Burma, from Pegu, through the greater portion of eastern Burma to Yunnan, Hainan and Formosa. From the last two places the birds differ slightly, but are very near indeed to the Burmese form.

Type. ♂. Brit. Mus. Reg. No. 86/12/1/1700. Moulmein, 4.12.78.

(6) **Zosterops palpebrosa simplex** Swinhoe. Ibis, 1861, p. 331: Amoy (nom. nud.); id., P. Z. S. 1863, p. 203.

Similar to *Z. p. palpebrosa*, but duller, more olive-green above and darker and greyer below, but still brighter and more yellow than in *peguensis*.

Measurements: wing 51–56·5 mm., bill 8·5–10 mm.

Distribution. Eastern China.

There are apparently several forms in China which require working out. Thus there are two southern forms, one much darker than the other and apparently having an east and west distribution; again, the Kukiang bird can at once be picked out from all others by its pale yellow throat.

(7) **Zosterops palpebrosa nicobariensis** Blyth, J. A. S. B. xiv. 1845, p. 563: Nicobars.

Similar to *Z. p. palpebrosa* from southern India, but darker and with a much larger bill, 11–12 mm., as compared with birds from N.W. India: wing 52–55 mm. I cannot separate Richmond's *ventralis* from the Car Nicobars (Proc. U.S. Nat. Mus. xxv. 1902, p. 288).

Distribution. Andamans and Nicobars, including Car Nicobar.

Zosterops ceylonensis Holdsworth, P. Z. S. 1872, p. 459, pl. 20. fig. 2: Ceylon.

This is a very dark bird with the throat a greenish yellow, and the upper parts dark olive-green with a distinct brownish tinge, especially on the head.

Distribution. Confined to the Ceylon hills from about 1000 feet upwards.

Zosterops siamensis Blyth, Ibis, 1867, p. 34 : Siam.

Whole underparts yellow.

Distribution. Pegu, S.W. and central Burma, Siam, Cochin China.

ZOSTEROPS AUREIVENTER.

(1) **Zosterops aureiventer aureiventer** Hume, Str. Feath. vi. 1878, p. 519 : Tavoy.

Differs from all forms of *palpebrosa* in its short black tail, measuring 30–32 mm., as against 34–37 mm. The green margins to the tail-feathers are absent or obsolete and the tail is practically black. There is a definite yellow streak down the centre of the breast and belly, and the flanks are a very pale grey, albescent where they meet the yellow stripe.

Distribution. Tenasserim and south along the coast through the Malay Peninsula and north through Karennee into the southern Shan States.

Zosterops mesozantha (Salvadori, Ann. Mus. Civ. Genova, vii. 1889, p. 396 : Karen Hills) is a synonym of this form.

(2) **Zosterops aureiventer buxtoni** Nicholson, Ibis, 1879, p. 167 : W. Java.

Vent and abdomen broadly yellow, flanks dark grey. Wing 48–51 mm.

Distribution. Java, Sumatra, Borneo.

(3) **Zosterops aureiventer tahanensis** Ogilvie-Grant, Bull. B. O. C. xix. 1906, p. 10 : Gunong Tahan, Pahang.

I cannot separate this bird, in any way as regards colour, from *buxtoni*, but it is a trifle larger, wing 49–50 mm. As they overlap so greatly this hardly seems a sufficient reason

to keep them as two races. The characters relied on by Robinson and Kloss, *i. e.* the yellow forehead, yellow lores and eyebrow, and yellower upper tail-coverts, are purely individual, and Dr. Hartert and I have carefully examined the specimens in the Tring Museum together and agree that the characteristics are of no sub-specific value.

Distribution. Malay Peninsula; mountainous country only.

VI.—*Some Remarks on the Names of certain Birds.*

By Claud B. Ticehurst, M.A., M.R.C.S., B.C., M.B.O.U.

In spite of all that has been written of recent years by expert nomenclaturists on what names have priority for each species, there are, and must be for years to come, a good many names which are still being used incorrectly even by the strictest priorists, since even in my small sphere of work a few have come under my notice, and I have thought that it would be desirable to call attention to them.

1. The Yellow-browed Warbler.—This is the *Motacilla superciliosa* of Gmelin, the *Phylloscopus superciliosus* of most authors. Unfortunately, as pointed out by Messrs. Mathews and Iredale (Austral Avian Rec. vol. iii. pp. 44–5, Dec. 1915), the *Motacilla superciliosa* of Gmelin is not the same species as the *Motacilla superciliosa* of Boddaert, 1783, and so, of course, *superciliosa* cannot be used for this Warbler. Messrs. Mathews and Iredale failed to find a synonym which could be used instead, and (*loc. cit.*) they proposed the name *præmium* for this bird, which would then become *Phylloscopus humei præmium*, and this name has been adopted in the B. O. U. List, 2nd Ed., 1915, etc.

These nomenclatorial explorers, however, need not have looked beyond Yarrell (Ed. iv. p. 445, footnote) to have got on the right track, and a little further search would have led them to Blyth's 'Catalogue of the Birds in the Museum of the Asiatic Society' p. 184, and so to J. A. S. B. xi. p. 191,

where Blyth gave an excellent description of this bird under the name of *Regulus inornatus*. Blyth says that the locality of his specimen was unknown, but he was informed that the species inhabits the vicinity of Darjeeling; in his Catalogue written seven years later he says it is common in Lower Bengal, and places it as a synonym of *modestus* of Gould (a name which many older authors seemed to have used impartially for *proregulus* and *superciliosus*, auct.), as he found it was simply *superciliosus* in worn dress. Gould's plate of *modestus* is none too good, but I do not think there can be any doubt that it represents *proregulus*. Blyth's description of his *inornatus* fits well the *superciliosa* of Gmelin, and does *not* fit any other *Phylloscopus* which inhabits Darjeeling and Lower Bengal. Moreover, in Mr. J. H. Gurney's copy of Blyth's Catalogue there is written in pencil in Blyth's own handwriting against *R. inornatus* "superciliosus Gmelin"! In future, therefore, the name of this bird should be known as *Phylloscopus inornatus inornatus* (Blyth), J. A. S. B. xi. 1842, pp. 191–2.

2. Eastern Yellow Wagtail.—This bird has masqueraded for years as *Motacilla flava campestris* Pallas, how and why it is hard to say. It is not the *Motacilla campestris* of Linnæus, 10th ed. p. 184. The next name available appears to be *flavifrons* of Severtzow ('Stray Feathers,' iii. Nov. 1875, p. 424). Whether *flavifrons* and *rayi* are to be regarded as racial forms of *flava* or not is, I think, a moot point.

3. The Olivaceous Willow-Warbler.—This is the *Phylloscopus indica* of authors and the *Sylvia indica* of Jerdon 1840, but not the *Sylvia indica* of Vieillot 1817, which is a *Tarsiger*. The next oldest name would seem to be *Phylloscopus griseolus* Blyth (J. A. S. B. xvi. 1874, p. 443 : Hugli River at Calcutta).

4. The Kashmir Red-breasted Flycatcher.—This is the *Siphia hyperythra* of Cabanis (J. f. O. 1866, p. 391) and also of many other authors. So long as this Flycatcher and its allies are kept in the genus *Siphia*, the name *hyperythra* can

stand, but Sharpe (Cat. B. M.), Legge ('Birds of Ceylon'), and Dr. Hartert (Vög. pal. F.) all put this little group into the genus *Muscicapa*. Now *Muscicapa hyperythra* cannot be used for this bird, as this association has already been used by Blyth (J. A. S. B. xi. 1842, p. 885,) for quite a different bird—one of the Blue Flycatchers—known as *Cyornis hyperythrus*. Those who would put these Flycatchers in the genus *Muscicapa* must find a new name for this bird; those who do not, can use *hyperythra*—a good instance, and not the only one, of a well-nigh insuperable difficulty which must be overcome ere we reach the millennium in uniformity of nomenclature.

5. The Eastern Sky-Lark.—In the Journal f. Ornith. of 1903 p. 149, Ehmcke described this Sky-Lark, which has an enormous breeding-range in western Siberia and Turkestan and an equally vast winter range in southern Asia, as *Alauda cinerea*, and a year later in the same publication changed the name to *cinerascens*, as *Alauda cinerea* was preoccupied in Gmelin's Syst. Nat. As *Alauda arvensis cinerascens* this has crept into recent literature and lists. Now in 1844, Hodgson used the name *dulcivox* in Gray's Zool. Misc. (p. 84) for an Indian Sky-Lark without giving any description, and consequently his name is a *nomen nudum*. Brooks ('Stray Feathers,' Dec. 1873, pp. 484–5) used *dulcivox* to describe "the only Indian Sky-Lark having a general resemblance to the European *Alauda arvensis*": in other words he described, and well described, the Sky-Lark of the *arvensis* group, which is common enough in the plains of India in winter. He goes on to say it is monticolous in summer, and calls it "a well marked Alpine Lark." In 'The Ibis,' 1892, p. 61, he says: "the large Lark of the Punjab is certainly not *A. arvensis*, and *A. dulcivox* should be kept distinct." So there is no doubt at all to what Sky-Lark Brooks referred. Dr. Hartert (Vög. pal. F. p. 247) against *Alauda dulcivox* Brooks puts the type-locality as "Alpine Region of North India." Now Brooks never said that this bird came from and bred in the Alpine regions of

North India, though, of course, he probably meant it. The next question is: Does an *arvensis* breed in the Himalayas, and, if so, is it different from the Siberian breeding bird? Mr. Whistler and I have for some years searched the literature on the subject, and although we have found plenty of statements regarding the alleged breeding of this bird there, on examination it has invariably been proved that the authors had mistaken a *gulgula* for *arvensis*. I could only find one author, Mr. J. Davidson, who had recorded both *arvensis* and *gulgula* breeding (in Kashmir); he kindly sent me his supposed *arvensis*, and it, too, turned out to be a *gulgula* (*guttata*). Mr. Whistler also, and his numerous correspondents in the Himalayas have failed to produce a breeding *arvensis* from those mountains, nor are there any among the huge series in the British Museum, nor in the Tring Museum. One is forced, therefore, to the conclusion that a breeding *arvensis* in the "Alpine Region of North India" is a myth. The question then arises: Do the winter birds from the plains of India differ in any way from the Sky-Larks of Siberia in similar plumage? and I cannot see that they do so. Therefore this eastern Sky-Lark should in future be called *Alauda arvensis dulcivox* Brooks, and *cinerascens* Ehmcke becomes a synonym.

Whilst on the subject of Himalayan Sky-Larks, I may call attention to a curious statement by Mr. Richmond. In a list of birds of Kashmir (Proc. U.S. Nat. Mus. xviii. p. 467) he gives *Alauda arvensis intermedia* as a breeding bird in that country. He explains that it is the *Alauda guttata* of other authors, but that as Kashmir and Shanghai (the type-locality for *intermedia*) birds are the same, *intermedia* has priority. I cannot agree—Swinhoe's *intermedia* belongs to the *arvensis* group, and is consideratly larger and of quite a different colour to Brooks's *guttata*, which belongs to the *gulgula* group. Richmond, of course, wrote this as long ago as 1895, when these Larks were not so well understood as they are now; and so it is all the more surprising to find that Mr. Stuart Baker has recently perpetuated Richmond's error (Journ. Bombay Nat. Hist. Soc. xxvii. p. 740).

VII. *Notes on some Indian Wheatears.*

By Claud B. Ticehurst, M.A., B.C., M.R.C.S., M.B.O.U.

(Text-figure 8.)

It is always rather a source of satisfaction, I think, in these days of changes to be able to show that what some of the older authors wrote was perfectly correct, though somewhat lightly cast aside by later writers. The birds—regular "bones of contention"—which are dealt with in this short paper are instances in point.

A. Œnanthe capistrata.

This species was described by Gould in his 'Birds of Asia,' and has been constantly muddled up by the older Indian writers with the bird which is now often called *pleschanka*, with the consequence that old records of these two birds want very carefully verifying. Thus Jerdon refers to *capistrata* when he speaks of *leucomela*; Barnes used *morio*, and Hume in his Catalogue also calls it *morio*; later on he called it *picata* and also *capistrata*, and his final opinion seems to have been that the latter was a stage of plumage of the former. Opinion since then has somewhat oscillated between this idea and the acceptance of two distinct species. Thus Oates in the 'Fauna of British India' put them as distinct species and described the salient distinctions quite correctly (as I hope to show), though his statement that *capistrata* is a constant resident in the plains of India is quite erroneous; Dr. Hartert, on the other hand, in his Vög. pal. Fauna regards the latter bird as a white-headed variety of a dimorphic species.

I have examined a very large series (about 300) of these Wheatears in the British and Tring Museums, and in Mr. Whistler's and my own collections, and I have come to the conclusion that they must stand as separate species on the following grounds.

I. *Characters in the male.*

(*a*) In *capistrata* the crown is isabelline grey in winter wearing to grey in summer or nearly white: very often the

feathers have dark bases which show up when abraded, giving a streaked appearance ; in *picata* the head is quite black like the mantle. It has been suggested that this is a dimorphism—a black-headed and white-headed form of one species—as is found in *leucopyga* ; but in the latter the head is black or white or particoloured, quite different from the isabelline grey of *capistrata* : also it has been said that every intergradation between black-headed and white-headed forms occurs ; a relatively small percentage certainly do occur in which the colours of the head are mixed, and with these I will deal later on.

(*b*) In the adults of both the mantle is glossy black : in the first winter *picata* this is usually as glossy as in the adult, but in the first winter *capistrata* it is always duller, a sooty or brownish black.

(*c*) On an average the wing of *capistrata* is longer than that of *picata* ; the great number of measurements which I have carried out (over 60 of each) shows well how wrong an impression may be given by the statement that wing lengths vary between two extremes ; thus the total variation in *picata* is from 89–99 mm. and in *capistrata* 90–99 mm., and judging by this one would at once say that the size is the same in both ; but when analysed these measurements show that 73 per cent. of *picata* are between 91 and 94, and 80 per cent. of *capistrata* measure 94 or more, or put in another way graphically in the form of a curve, that of *picata* has fallen to zero just as that for *capistrata* has reached its apex.

II. *Characters in the juvenile plumage.*

There are plenty of specimens of juvenile *picata* in collections, but none for certain of *capistrata*. It is known that the juvenile of the former is dark brown above, but at Gilgit, where both species breed, two forms of juveniles occur, a darker and a lighter brown (quite apart from sex) ; this is very suggestive ; moreover from Turkestan, whence I have only seen *capistrata*, from the same locality there is a juvenile of the lighter brown type.

III. *Characters of the female.*

(*a*) Here too one finds very distinct differences: in *picata* the adult has a blackish throat, not quite as pure as in the male, but still distinctly black; *capistrata* has a fulvous throat.

(*b*) In *picata* the back is very dark, in some almost black, in others blackish brown; in *capistrata* it is rather a sandy brown.

(*c*) The ear-coverts are as a rule darker in *picata* than in *capistrata*.

(*d*) In the first winter plumage the black throat of *picata* is indicated by a dusky patch varying somewhat in intensity; the back is not so dark as in the adult, but darker than in *capistrata*; however, I confess some first-year females may be difficult to place.

(*e*) As in the males, so in the females, *capistrata* averages larger. 72 per cent. of *picata* measure, wing 87–89 mm., and just on 70 per cent. *capistrata* measure 90 and upwards, and the curves of measurement show exactly the same characteristics as pointed out under the males.

IV. *Geographical considerations.*

There is no possible doubt that *picata* is the breeding bird of eastern Persia and of Persian and British Baluchistan, and is very common, whereas *capistrata* appears to be very rare; I have seen one breeding male from this area against about thirty of *picata*. In the N.W. Frontier Province both breed according to Whitehead (Ibis, 1909, p. 216–7), *capistrata* in the Safed Koh, *picata* in the Samana range, both at about the same altitude apparently. In Gilgit (Scully and Biddulph, Stray Feathers, x. pp. 112 & 266) both breed, as they probably do in Chitral, though Perreau (J. Bombay N. H. Soc. xvi. p. 50) only definitely states that *capistrata* breeds and *picata* "occurs." From Kashmir I have only seen *picata*; in Turkestan *capistrata* breeds in the neighbourhood of Samarkand, from which country I have not seen any *picata*. Thus it will be seen that there is a difference in breeding range indicated, though it must be remembered that over an

enormous area in Afghanistan the status of the two birds is unknown.

Turning to winter distribution, differences are again found; *picata* is the bird of the whole of Baluchistan, eastern Persia down to S.W. Persia and also Sind; in this area *capistrata* is very rare, I find one record from Seistan, one from Baluchistan, and four or five only from Sind. My own experiences of these birds in Sind show well the difference in distribution: *picata* is a very common bird everywhere and I must have seen hundreds; of *capistrata* I obtained one female and thought I saw one male! In the Punjab both species occur, but *capistrata* is by far the commonest in most parts. In Rajputana both occur, but *picata* is far the commoner; in the United Provinces only *picata* has been found. As Hume says (S. F. iii. p. 475), "as you go south and east towards their limit of distribution *capistrata* becomes rarer and rarer, and there is a belt of 100 to 200 miles wide where *capistrata* is rarely seen; on the other hand, in the extreme north-west (of the plains) *capistrata* is much the most common and there is an intermediate zone where both are equally plentiful."

In the N.W. Frontier Province there is only Whitehead's statement that *picata* is fairly common round Kohat and that *capistrata* is very abundant. Such differences in distribution both in summer and winter cannot be explained by the supposition of dimorphism: in other dimorphic Chats there is apparently no distributional difference.

That the white- and black-headed birds are not the result of age is quite certain. Biddulph (S. F. ix. p. 321) first pointed this out, and as one can easily pick out first-year birds from adults by their brown, not black, flight-feathers and primary coverts, so one can easily see that both forms occur in both ages. Biddulph and Scully got an enormous series of these birds in the breeding-season at Gilgit, and found that *picata* was far the commoner, *capistrata* was rare and some males were intermediate in the coloration of the crown; from the examination of these in the British Museum and the few others I have seen from the Punjab in

winter, it seems reasonable to suppose that where the two birds meet hybridization occurs. It has been found to be the case with Bulbuls, and I see no reason why it should not occur in these Chats.

B. Œnanthe deserti oreophila.

This bird was described by Gould (Birds of Asia, iv. pl. 30, 1865) as *Saxicola montana*; Oberholser (Proc. U.S. Nat. Mus. xxii. 1901, p. 221) has subsequently shown that this name was preoccupied by Koch (Syst. B. Zool. 1816, p. 185) and suggested the name *oreophila*.

Oates (Faun. Brit. India, ii. p. 78) perfectly correctly indicates the differences between this bird and *deserti*, namely, the larger amount of white in the wing and larger size; he also roughly indicated its different distribution, though he treats *deserti* (=*d. atrogularis*) and *montana* (=*d. oreophila*) as two species, and not races of one species as I should consider them to be. It is difficult to see exactly why Dr. Hartert (Vög. p. Faun. p. 684) relegates *montana* to the synonymy of *atrogularis* except that he thought that there was a great deal of individual variation in the amount of white in the wings and that, though these birds seemed large, there was apparently no geographical limit between the two forms. In consideration of these divergent views of Dr. Hartert and Oates I have gone into the question *de novo*. I have examined a very large series of Asiatic Desert Wheatears (over 200) contained in the British, Tring, and Bombay Museums, as well as in my own collection, and on this my opinions are based.

Firstly, the amount of white in the wings of males certainly varies somewhat, and I have only accepted as *oreophila* those in which the white on the inner webs of the primaries reaches to the quill. In the vast majority this distinction is very striking and the birds can be picked out at a glance: the white is very pure and sharply contrasted, and is found equally in adult and nestling plumage. There are very few birds which cannot be placed at once as either *oreophila* or *atrogularis*; in the latter some have white

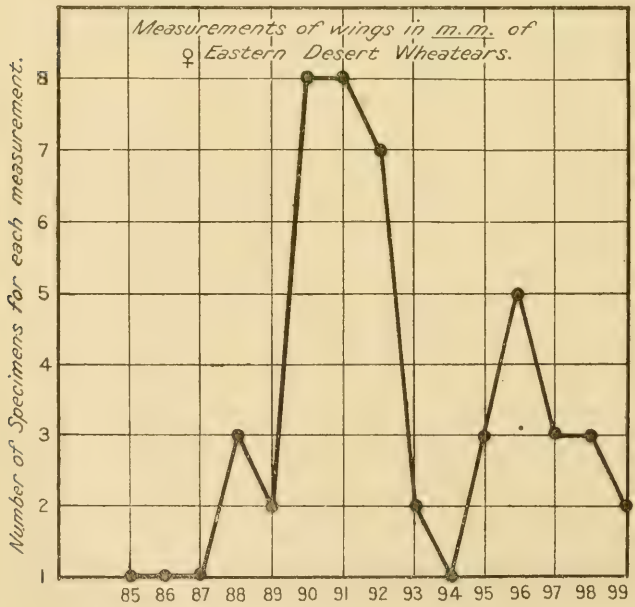
edging to the inner webs, in some it reaches further and even half the web may be white, and the different stages are found equally in adults and in birds of the year.

Secondly, on measuring I find that, as Oates said, the white-winged birds are on the whole larger.

50 ♂ *oreophila*.	50 ♂ *atrogularis*.
W. (95) 96–104, once 106.	W. 92–99 mm.
T. 67–71.	T. 64–71 mm.
Bill from base 17·5–19 (mostly 17·5–18·5).	Bill 16–18·5 (mostly 16·5–17·5 mm.)

Though a good many of the two races overlap in bill measurement and about 15 per cent. of *oreophila* in wing measurement, yet the differences taken in conjunction with the whiteness of the wing constitute alone sufficient grounds for separation.

Text-figure 8.



As regards females, many show no white in the wing at all and some show a varying amount, up to half the web being white, and most of these latter are large birds. I have

measured 50 females from many eastern localities and picked out haphazard, and on plotting their wing measurements (length against the number of specimens for each length) a very suggestive curve comes out (text-figure 8). Thus we see that the curve rises to an apex at 90–92, falls practically to zero at 94, and rises again to another apex at 96. Now no species, unless there was a large race of it included in the measurements, would show a curve of this nature. Moreover, these large females, such breeding birds as I have seen, come from the same localities only as do *oreophila* males.

Lastly, does this large white-winged race show a definite geographical distribution? I think there is no doubt that it does. It is a high alpine form and is the breeding bird of Thibet from Kuku Nor Mts. to Ladak, Baltistan, and probably Kashmir, and the mountains of western Chinese Turkestan, all localities of 12,000 ft. or more. *Œ. atrogularis*, on the other hand, does not breed in this area though it passes through on passage, and it breeds over a far wider area and almost certainly at lower elevations. It breeds in the Kirghis Steppes, S. Caucasus, Persia, Persian and British Baluchistan, Seistan, Yarkand plains, and probably lower elevations in Turkestan. The only locality where the two races appear to meet one another is in western Chinese Turkestan, and here there seems to be an altitudinal difference in distribution, and, possibly, the same thing occurs in other parts of Turkestan, though there are no specimens to prove it.

In winter the distribution of the two races again is different. *Œ. oreophila* is found in Seistan, E. Persia, Persian Baluchistan as far west at least as Gwadar, Afghanistan, Muscat, Kashmir (October) and, according to Oates, Socotra; on passage I have seen it from Gharwal in the Himalayas, also near Bokhara: Scully noted it arriving at Wakhan in the Lower Pamirs in the last half of April. *Œ. atrogularis*, on the other hand, has a much wider distribution and is found in Nubia, Sudan, Mesopotamia, plains of northern India east to the United Provinces, and occasionally even western Bengal (from none of these localities have I seen *oreophila*),

S. Arabia, whole of Persia and Baluchistan, and some may even winter in Turkestan.

Œ. oreophila evidently breeds later than *atrogularis*, as would be expected ; the latter has young on the wing by mid-May and the adults are fully moulted by mid-July ; whereas in *oreophila* young are not on the wing till the end of July and the adults have not fully moulted till the end of August.

The name *albifrons* for the bird I have called *atrogularis* has been introduced in recent years in some works ('Hand-list of British Birds' ; B. O. U. List, 1915 ; 'Practical Handbook of British Birds,' etc.), but quite incorrectly as it is clearly preoccupied (Rüppell, N. Wirbelt. 1837, p. 78). It is a great pity that such names which have never been widely used should have been allowed to creep into authoritative nomenclatural lists without very careful checking.

The Desert Wheatears will then stand as follows :—

Œnanthe deserti deserti (Temm.), Pl. Col. 359, fig. 2, 1825. Egypt, Nubia, Arabia.

Œnanthe deserti homochroa (Tristr.), Ibis, 1859, p. 59. Sahara east to Wadi Natrun in Lower Egypt.

Œnanthe deserti atrogularis (Blyth), J. A. S. B. xvi. 1847, p. 131. S.W. Asia east to British Baluchistan, Russian and Chinese Turkestan.

Œnanthe deserti oreophila (Oberh.), Proc. U. S. Nat. Mus. xxii. 1901, p. 221. Tibet, Ladak, Baltistan (= *montana* of Gould).

The two Indian Pied Wheatears will stand as follows :—

Œnanthe picata (Blyth), J. A. S. B. xvi. 1847, p. 131. E. Persia, Persian and British Baluchistan, N.W. Frontier Province to Gilgit.

Œnanthe capistrata (Gould), B. of Asia, iv. 1865, pl. 28. N.W. Frontier Province, East Afghanistan to Samarkand.

VIII.—*The Birds of Spitsbergen and Bear Island* *. By the Rev. F. C. R. Jourdain, M.A., M.B.O.U., C.F.A.O.U.

The literature of the Spitsbergen group has been so exhaustively dealt with by Prof. A. Koenig and the late Dr. O. Le Roi in 'Avifauna Spitzbergensis,' that it seems unnecessary to reprint the long list of papers on the ornithology of the group, which is practically complete up to 1911. Some addenda will, however, be found in a paper by H. Schalow in the J. f. O. 1912, pp. 621–630.

By far the most important work on the ornithology of Spitsbergen is that of Koenig and Le Roi, in which the foreign literature (ignored by English writers on the subject almost entirely) is carefully collated. This fine work must always remain the foundation of all future research on the subject. Of earlier writers on the subject, Friderich Martens (1675) gave a list of 17 species, of which 15 can be identified with certainty; C. J. Phipps ('A Voyage towards the North Pole, etc.' 1774) records 12 species; J. C. Ross (Appendix to W. E. Parry's 'Narrative of an attempt to reach the North Pole,' 1828) mentions 21 forms, of which 17 are probably correct: and O. Torell ('Bidrag till Spitsbergens Molluskfauna,' 1859) includes a list of 30 species, of which 22 are reliable. Malmgren ('Anteckningar till Spetsbergens Fogel-Fauna,' 1863) records 28 species, of which 3 are doubtful, and estimates the breeding species at 22. In his 'Nya anteckningar till Spetsbergens fogelfauna,' 1864, the number of recorded species is raised to 27, and 15 species are recorded from Bear Island. The Rev. A. E. Eaton ('Zoologist,' 1873, pp. 3762–3772; and 1874, pp. 3805–3822) has some interesting notes on the fauna, and treats of 24 species. T. v. Heuglin ('Reisen nach den Nordpolarmeer in dem Jahren 1870 und 1871,' 1874) compiles a list of 32 species, 2 of which should be deleted, while Sundevall ('Spetsbergens Foglar, etc.,' 1874) estimates the

* Contributions of the Oxford University Expedition to Spitsbergen. No. 1.

number at 29, one of which is very doubtful. A. H. Cocks ('Zoologist' 1882, pp. 321, 378, & 404) treats of 21 species observed by him, and in a later paper (*op. cit.* 1883, pp. 393, 433, 479 ; 1884, p. 13) raises the number to 33, of which, however, 4 rest on uncertain evidence (*cf.* also *op. cit.* 1884, p. 231 ; and A. Chapman, Nat. Hist. Trans. Northumberland, viii. p. 138). A. Pike contributed notes on "A Winter in the 80th Degree," to Chapman's 'Wild Norway' (1897), and A. Trevor Battye (Ibis, 1897, pp. 574–600) a paper on "The Birds of Spitsbergen as at present determined" ; but only 29 species are recorded, of which only 24 were met with by his party. F. Römer and F. Schaudinn's 'Fauna Arctica,' 1900 (*cf.* also Orn. Monatsber. 1900, pp. 100, 116, 136, 153, & 165), and a very useful paper by G. Swenander, "Beiträge zur Fauna der Bären-Insel, I." (1900), in which 22 species are recorded, as well as G. Kolthoff's valuable 'Bidrag till Kaennedom om norra Polartrakternas Däggdjur och Fåglar' (1903) should also be consulted. Graf Zedlitz has also published some notes in the J. f. O. 1911, pp. 300–327, on birds observed in Norway and Spitsbergen.

The first party of the Oxford University Expedition left Tromsö on the night of 10 June, 1921, and reached Bear Island on 13 June. Here a party remained till 23 June, when the Expedition sailed for Spitsbergen, arriving at the mouth of Ice Fjord on the evening of 25 June. The west and north coast up to Liefde Bay and Moffen Island were then worked and a camp formed on Prince Charles Foreland (20 June–10 July). The exploring party arrived at Bruce City on 21 July, and on the 22nd the first party left Longyear City for Tromsö, which was reached on 26 July, the second party not returning till September. Dr. G. J. van Oordt, of Utrecht, who was staying at Cap Boheman in Ice Fjord at the time of our visit, has kindly contributed some notes, which are incorporated in this paper.

List of Species recorded from Bear Island and Spitsbergen.

[**Corvus corax** L. Raven. One reported in summer 1874 by sailors of Mr. A. Campbell's party (Ibis, 1875, p. 272).]

1. **Corvus cornix** L. Hooded Crow.

Dr. Bunge saw a Hooded Crow on 16 May, 1900, at Goose Bay in Horn Sound. Tobiesen also reports two Crows on Bear Island on 30 March and 20 May, 1866. A Crow (sp.?) was also seen at Bell Sound by a member of Nathorst's Expedition.

2. **Corvus (frugilegus** L.?). Rook.

Dr. Bunge saw in Horn Sound a black *Corvus* on 16 and 17 May, 1900 (as well as *C. cornix*) which he supposed to be *C. corone,* but as Bianchi suggests, it was more probably *C. frugilegus.*

[Martens (1675) records Black Crows as seen in Spitsbergen, but whether this refers to straggling Ravens, Crows, or possibly Rooks is quite uncertain.]

3. **Sturnus vulgaris vulgaris** L. Starling.

Koenig's party discovered the remains of a Starling on the north coast of Bear Island (Herwig Harbour) on 14 July, 1907.

4. **Carduelis hornemanni** (Holb.). Hornemann's Redpoll.

Scoresby in 1820 includes "*Fringilla linaria*" as met with at sea about 10 miles from land. Several were taken alive. In 1874, A. E. Eaton records one as alighting on the ship on 27 May, 1873, in lat. 75° 13′ N. and another as shot in Wijde Bay, while the crew saw 5 or 6 others and found a nest with eggs, possibly of this species. No later records. The skin is in the Cambridge University Museum.

5. **Loxia curvirostra** L. Crossbill.

A small flock (perhaps a family party) met with on Bear Island on 25 July, 1868, and two specimens were obtained by Malmgren.

6. **Plectrophenax nivalis nivalis** (L.). Snow-Bunting.

Summer resident, very generally distributed and in some districts common. In Bear Island it is not numerous except in the boulder-strewn tracts. At the settlement of Longyear City, in Advent Bay, it is as common and familiar as the Sparrow at home, nesting in the houses. A favourite site is under a boulder or among piled up rocks, but nests may also be found in crevices of cliffs overhanging the sea. The clutch varies from 4 to 7 in number. Young on wing, 18 July.

7. **Anthus** sp.? Pipit.

A small Pipit came on board the 'Severine' off Bear Island in 1868, but was not secured. This was probably some form of Rock-Pipit (? *A. spinoletta littoralis*). Heuglin also saw a Pipit (?) on the cliffs of Stor Fjord. On 15 June, 1921, Dr. T. G. Longstaff met with a Pipit on the east side of Bear Island, and had a shot at it, but failed to obtain it. [H. L. Powell reported a bird with a Lark-like song seen high in the air at Walrus Harbour, Bear Island, on 14 June.]

8. **Œnanthe œnanthe leucorhoa** (Gmel.). Greenland Wheatear.

Four occurrences. One from Moffen Island in summer of 1891 recorded by Collett, and three obtained by Koenig's Expedition in 1908 at Van Keulen Bay (two, 14 June) and Horn Sound (25 June), which are ascribed to this race.

9. **Turdus musicus** L. Redwing.

Once recorded from Bear Island: remains of one picked up 13–14 July, 1907, on the north coast by Koenig's party. Two occurrences in Spitsbergen: one at Horn Sound found on 8 October, 1899 (Bianchi) and others said to have been seen. A dead bird was picked up by J. D. Brown on 13 July, 1921, near Cape Wijk, in Dickson Land.

10. **Turdus merula** L. Blackbird.

Remains of a female picked up 13–14 July, 1907, on the north coast of Bear Island (Koenig).

11. **Hirundo rustica** L. Swallow.

One seen in Coal Bay in summer 1874 by three members of the Campbell Expedition (Ibis, 1875, p. 272). Bianchi also records a Swallow as seen in Horn Sound, 29 May, 1900.

12. **Apus apus** (L.). Swift.

Collett records one in Tromsö Museum, obtained in August 1891 off the coast of Spitsbergen.

13. **Upupa epops epops** L. Hoopoe.

One obtained in August 1868, in lat. 76° 5′ N., on a ship off south Spitsbergen, and now in Christiania Museum (Collett).

14. **Nyctea nyctea** (L.). Snowy Owl.

Probably a resident in small numbers. Le Roi mentions some 15 occurrences, chiefly in July and August, but also in March, October, and November. Apparently dependent on the Ptarmigan for food during the winter, and in consequence local. Not identified with certainty by the Oxford Expedition in 1921, but we had good evidence of its occurrence in 1920 both in Ebba Valley (Klaas Billen Bay) and Green Harbour.

15. **Falco rusticolus** (subsp. ?). Falcon.

Apparently only observed on a few occasions and no specimens obtained. One seen Wijde Bay, 4 June, 1863, and again at Treurenberg Bay a few days later (Malmgren). Also recorded from Ice Fjord in 1870; Van Keulen Bay, July 1881; Cap Thordsen, 12 September, 1882; Recherche Bay, 22 September, 1882; and probably on 22 September, 1899, in Horn Sound. There can be no doubt about the Cap Thordsen record, as the bird stooped at the Pigeons at the Swedish Meteorological Station. Not recorded from Bear Island.

16. **Cygnus** (sp.?). Swan.

No specimens extant and no recent records. A Swan (sp.?) was shot in Stor Fjord several years prior to 1861: others were reported as seen by sealers in Ice Fjord, and by Captain Kuylenstjerna in August 1861 in Advent Bay.

17. **Anser brachyrhynchus** Baill. Pink-footed Goose.

Passage migrant only on Bear Island. "Grey" Geese reported on passage by Lerner, 28 May, 1899, and single birds by Swenander in July 1899; Le Roi, 20 June, 1907; and on 15 June, 1921, by two members of the Oxford Expedition. Fresh droppings also noted. In Spitsbergen it is a widely-distributed summer resident, and breeds in many places on the west and north-west coasts as well as in Ice Fjord, and has been met with in Barents Land, Edge Land, and King Charles Land. The nesting-sites vary considerably; many birds breed on ledges or grassy slopes on the face of cliffs by the sea; others on great expanses of shingle in open valleys, or on slightly raised terraces in almost flat swampy valleys several miles inland. Clutches found varied from 2 to 4 in number, but Le Roi records 5, 7, and in one case 9, but evidently by two females. Moulted primaries were picked up on 7 July in Liefde Bay, and specimens shot on 17 July were incapable of flight.

18. **Branta bernicla bernicla** (L.). Brent Goose.

Although it probably occurs annually at Bear Island on passage, there seems to be no definite record of this species beyond Kolthoff's statement that he met remains (? droppings) north of Elend-Berg (Mount Misery); but on the evening of 14 June, 1921, three birds flew inland from the sea at Walrus Harbour. In Spitsbergen though many of the large colonies on islands have been so systematically raided by egg and down collectors, that the birds have been driven away almost entirely, it is still present in some numbers, and breeds chiefly on islands and rocky points, but also at times inland by banks of streams. It appears to be more widely distributed round the coast than *A. brachyrhynchus*, and breeds not only on the west side and in Ice Fjord, but also along the north coast and its outlying islands and at several places on the east side. The highest number of eggs found by us in a clutch was 5, but Koenig met with 6 on one occasion, and 7 and even 8 (?) have been recorded. Young in down were first met with on 14 July by us, but Koenig reports recently

hatched young on 10 July. Flightless Brent were associating with Barnacle Geese and many Pink-footed Geese on 17 July, 1921, on a lagoon in the Sassen Valley.

19. **Branta leucopsis** (Bechst.). Barnacle Goose.

Till the date of Koenig's two expeditions in 1907 and 1908 we had no reliable information as to the breeding habits or eggs of this species. In 1907 he found a small colony nesting on "bastions" of rocks projecting from the side of one of the valleys debouching on Advent Bay, and obtained two nests with 5 and 4 eggs respectively, while in 1908 he obtained a third nest with 3 eggs. These remained the only fully authenticated specimens till 1921, when we had the good fortune to obtain no fewer than 5 nests, containing 22 eggs, while others proved to be inaccessible. The nests were generally on moss-grown slopes at the foot of a steep bluff, with another drop of 20 feet or more below, or on outlying spurs of rock projecting over the valley below. There is reason to believe that other nests were placed in even more remarkable sites, as a Goose was seen to leave a hollow in the face of an overhung cliff, and another bird was seen apparently incubating on the top of a mushroom-shaped pinnacle of rock at the summit of a high range of cliffs. We have now good evidence of the breeding of this species, not only in Advent Bay, but also in Sassen Bay, Klaas Billen Bay, and Dickson's Bay, while Ice Fjord appears to be the main breeding-ground of this fine species, though it certainly also breeds in Wijde Bay, and probably in Bell Sound. Evidently the same sites are resorted to year after year (as is also the case with *A. brachyrhynchus*), and in some cases even the same nesting hollow. The ganders of all three species of Spitsbergen-breeding Geese are generally to be found standing on guard by the side of their incubating mates. Measurements of the 22 eggs taken by Mr. A. H. Paget Wilkes and myself, together with Koenig's 12 eggs, give an average of 76·3 × 49·8 mm.; max. 82·7 × 46·4 and 77·6 × 52·7 mm.; min. 70·6 × 50 and 82·7 × 46·4 mm. Two flightless males were shot from a mixed flock of about 60 Geese in Sassen Valley on 17 July, 1921.

20. **Anas crecca crecca** L. Teal.

Casual visitor to Bear Island; three shot on 5 August, 1907. In Spitsbergen, Dr. Bunge saw on 16 May, 1900, Ducks in Horn Sound which he ascribed to this species or *A. querquedula*, and Schalow records one killed towards the end of March 1901 in west Spitsbergen.

21. **Anas penelope** L. Wigeon.

Not previously recorded from Bear Island. On 18 June, 1921, a flock of nine Ducks flew inland east of Cape Bull and settled on some marshy ground. They rose wild and gave no chance of a shot, but we could plainly see their reddish heads and light grey backs, while they had not the black breast of *Nyroca ferina*. H. L. Powell had seen a Duck at Walrus Harbour two days previously, which was almost certainly the same species. In Spitsbergen, Le Roi records a male on Anser Islands on 8 July, 1907, and on 27 June, 1921, four Ducks were seen by Messrs. Brown and Wilkes at the same place, which must have been Wigeon.

22. **Anas acuta** L. Pintail.

Once on Bear Island: a male on 15 July, 1898 (Kolthoff). In Spitsbergen: a male and a female seen in Recherche Bay, 13 June, 1898; two Ducks seen in Van Mijens Bay on 4 July, also probably this species, but not certainly identified (Kolthoff).

23. **Harelda glacialis** (L.). Long-tailed Duck.

In Bear Island, though by no means common, it occurs on the larger lagoons and in the flat northern half of the island on the numerous lochs and tarns, and evidently breeds. In Spitsbergen it is sparingly distributed along the western and northern coasts to Wijde Bay and Ross Island. Apparently the nest has only once previously been found in Spitsbergen and once in Bear Island. Two nests were discovered by the Oxford Expedition; one with 8 eggs, neatly hidden in a recess in rock on the Reindeer Peninsula (Liefde Bay) on 7 July, and a second on the open tundra near Cap Boheman, with 6 highly incubated eggs, on 12 July. Several pairs were evidently breeding near Liefde Bay, not

only on the islands, but also on the adjoining mainland, and a pair at Kings Bay.

24. **Oidemia nigra nigra** (L.). Common Scoter.

First recorded from Bear Island in 1907 by Koenig and again in 1908. In June 1921 we met with pairs on the little tarns in the hills and also on the lagoons in the low ground. They had evidently not yet begun to nest, but probably breed in small numbers here and also in the watery northern flats. In Spitsbergen the only definite record is from Recherche Bay, where Koenig found a nest with 6 eggs on 15 July, 1905.

25. **Somateria mollissima borealis** (Brehm). Northern Eider.

Resident on Bear Island, but only in small numbers, absent only when the bays are frozen up in winter. Much commoner in Spitsbergen, breeding in great numbers on the numerous Eider holms, especially Dun Islands, Anser Islands, Edinburgh Islands, Kings Bay, Cloven Cliff, and the islands in Liefde Bay. Also numerous on Moffen Island. Enormous numbers of eggs are systematically taken for food and the down collected for the Norwegian market. Where undisturbed, large clutches were met with, 6 or 7 being normal and 8, 9, and once 10 being met with. A nest with 13 eggs was probably due to two females laying together.

26. **Somateria spectabilis** (L.). King Eider.

Frequently recorded from Bear Island, but chiefly immature birds. No evidence of breeding here. In Spitsbergen the King Eider has been recorded from many points on the west coast and Ice Fjord, but the only evidence of breeding comes from Axel Island (?) (Nordenskiöld), the swamps at the head of Advent Bay where Koenig obtained two incomplete clutches in July 1907, and a holm off the south-west of Prince Charles Foreland, where Dreyer obtained a clutch in 1882. We met with a flock of about 30 males in the Foreland Sound on 30 June, 1921, and single males

were shot on the Edinburgh Isles (29 June) and Dickson Land (26 June), and others seen. Dr. G. J. van Oordt showed us a nest with 5 eggs on the tundra behind Cap Boheman on 12 July, and the same afternoon I flushed a female from another nest with 5 eggs on the open tundra. From notes kindly supplied by Dr. van Oordt it is evident that this Eider breeds in scattered pairs over a vast expanse of open tundra, though apparently occasionally also among the crowded Common Eiders on an Eider holm.

27. **Fulmarus glacialis glacialis** (L.). Fulmar Petrel.

Breeds in vast numbers on the upper part of the sea cliffs round the southern part of Bear Island. Some scores of birds were sitting on their nests on the flat top of Gull Island, South Haven, and the top of a stack near Cape Bull was white with them. It was even more surprising to find them breeding on a big cliff, out of sight of the sea, together with Kittiwakes and Glaucous Gulls. On Spitsbergen it was ubiquitous, patrolling the coast line with tireless flight and breeding in most of the mountain cliffs. Here, too, we found nesting colonies several miles inland up the valleys, and subsequently the exploring party noticed breeding stations on Mt. Terrier up to 3000 feet, and found a small colony at the head of Oxford Glacier, 20 miles from the sea in either direction.

28. **Podiceps griseigena griseigena** (Bodd.). Red-necked Grebe.

Dr. Finsch records one obtained in 1868 on Spitsbergen by the German North Polar Expedition.

29. **Colymbus arcticus** L. Black-throated Diver.

A. H. Cocks mentions having seen a pair of Divers, which he felt sure were Black-throated, near Green Harbour on 9 September, 1882 (Zool. 1883, p. 399; 1884, p. 15); and a Norwegian, Klerk by name, assured him that he had shot one some years previously. On 30 June, 1921, one pitched on the Richard Lagoon, on the north-west of Prince Charles Foreland, and remained there for 20 minutes before

flying off. At times it came quite close to us, and was watched through a powerful stalking glass and field-glasses by Messrs. S. Gordon, D. Brown, H. Paget Wilkes, and myself.

30. **Colymbus immer** Brünn. Great Northern Diver.

Two seen by Nathorst off Bear Island in September 1882. In Spitsbergen it is said to have been seen in September 1882, north of Bell Sound (Zool. 1884, p. 15); by Kolthoff on 8 June, 1900, off the south-west coast, and by W. S. Bruce on Prince Charles Foreland (Geog. Journal, 1908, p. 147). Zedlitz (J. f. O. 1911, p. 300) ascribes a black-throated Diver seen by him 150 yards away at sea in rough weather in 1910 to *C. adamsi*.

31. **Colymbus stellatus** Pontopp. Red-throated Diver.

A few pairs on the tarns in the south of Bear Island, and common in the north. In Spitsbergen it is widely distributed, breeding on most of the fresh-water pools on islands and also on the mainland. The nest is built of masses of *Sphagnum*, and is usually close to the water's edge, though one on the Moffen Island was 20 yards away. In this case the incubating bird shovelled her way to the nest on her breast, without making any attempt to walk. Young on water with parents in Sassen Valley on 17 July.

32. **Charadrius hiaticula hiaticula** L. Ringed Plover.

On Bear Island, Koenig's Expedition obtained three on 18 June, 1907, and on 3 July, 1908, a female with incubation patch. In Spitsbergen it has been recorded on many occasions since 1827 on the west and north coasts, as well as in King Karl Land, but though evidently breeding, no nests have hitherto been found. At Advent Bay three or four pairs were found breeding about 300 ft. up the side of a valley on 21 July, 1921. In one case the bird was watched on to young which had only been hatched six hours or so (S. P. Gordon) *.

* *Charadrius morinellus* is said to have been found dead by Keilhau in Edge Land in September 1827, but his identification cannot be depended on.

The only two birds I have been able to examine are both rather short-winged (125–127 mm.).

33. **Charadrius apricarius apricarius** L. Golden Plover.

Not previously recorded either from Bear Island or Spitsbergen. Soon after landing at Walrus Harbour on 13 June, we saw a pair, of which the male was shot, but the female escaped. We saw no more of this species till our last day on Bear Island, when I met with a pair high up in the mist-covered hills near Cape Bull. The male was very anxious and probably was breeding not far away.

34. **Arenaria interpres interpres** (L.). Turnstone.

On Bear Island it has been seen on two occasions: by Kolthoff in 1898 and Duge in 1899. On Spitsbergen, Le Roi mentions about 9 records, and Zedlitz (J. f. O. 1911, p. 323) suggests that some pairs breed in the marsh at the head of Advent Bay. Probably they breed in Ice Fjord, as birds were shot in Dickson Land and Gyps Valley and a pair seen near Cape Wyk on 13 July, 1921. In Liefde Bay and its islands we found Turnstones present in some numbers and breeding. Between 3 July and 7 July, nineteen pairs were located, and in eighteen cases one or other parent watched on to incubated eggs or recently hatched young.

35. **Calidris canutus** (L.). Knot.

Once recorded (♂, 22 August, 1889 on Berentine Island) by A. Walter.

36. **Erolia alpina alpina** (L.). Dunlin.

Previous reliable records of this species are very scanty. Walter saw one on Edge Land and obtained another on King Ludwig Isles in 1889. A wing picked up by Feilden in 1894 at Green Harbour probably belonged to a Dunlin, and on 15 June, 1908, Le Roi shot a female at Advent Bay. In 1921 two were seen and one female shot on the Edinburgh (Foreland) Isles on 29 June, and H. L. Powell saw three others. In Sassen Valley on 17 July about five pairs were met with; the males were flying anxiously round and

trilling, but no occupied nest was found in the limited time available, though the birds were evidently breeding. One male was shot. Dr. Van Oordt also saw one near Cap Boheman on 25 June. Our two Spitsbergen specimens (and others seen) have less black on the breast than Norwegian birds.

37. **Erolia maritima maritima** (Brünn.). Purple Sandpiper.

Widely distributed, and may be met with almost everywhere where the ground is free from snow, both on Bear Island and Spitsbergen, breeding on the hillsides as well as the low ground. Full clutches were taken on Bear Island from 16 June onward. The incubation period according to Dr. Van Oordt's observations lasts about 21 days.

38. **Crocethia alba** (Pall.). Sanderling.

Absent from Bear Island and only recorded on four occasions prior to 1907, when W. S. Bruce obtained young in down on Prince Charles Foreland, and thus proved that occasionally at any rate it breeds in the group. In 1908 over twenty were observed by Koenig's party on six separate occasions between 15 and 26 June, and fourteen specimens obtained. We first met with it in Liefde Bay on 3 July, 1921, when two males were shot and two other birds seen on Reindeer Peninsula. On 6 July one was seen on the Iles de Canards, and two were watched for some time on the mainland on 7 July.

39. **Phalaropus fulicarius jourdaini** Iredale. Grey Phalarope.

Koenig met with several pairs on the north coast of Bear Island, evidently breeding, on 13–14 July, 1907. In Spitsbergen it occurs locally at many points on the west coast and in Ice Fjord. On the north coast we found it breeding on the islands in Liefde Bay, as well as on the mainland, in the neighbourhood of marshy pools. Nests were also met with by us on the Edinburgh Isles, the Anser Islands, and the tundra near Cap Boheman in Ice Fjord. It has also

been found on the east side, and breeds on King Ludwig Isles (Koenig) and King Charles Land.

This form was separated by Iredale (Bull. B. O. C. xlii. 1921, p. 8) from the typical race, described from Hudson Bay, on account of the decidedly paler coloration of the edgings of the feathers of the back, scapulars, and tertials, which are warm cinnamon in the American bird and pale creamy in Spitsbergen specimens. This is most apparent in the females. Meinertzhagen has attempted to show that this difference is due to bleaching, and unfortunately at the time we had no European May-killed specimens to compare with those shot on the American sea-board at this time; but specimens recently received, shot at Hudson Bay, in July show the characters of the American race and are readily distinguishable from Spitsbergen birds killed at the same time, while a bird from Devonshire (14 May, 1908) is very noticeably paler than the American birds.

40. **Phalaropus lobatus** (L.). Red-necked Phalarope.

Only three records: a male on 23 June, 1900, at Coal Bay (Kolthoff) and a pair in the delta of Advent River, 29–30 June, 1907 (Koenig). The latter were apparently breeding.

41. **Numenius phæopus** (L.). Whimbrel.

A dead bird recorded from Bear Island in June 1898 (Römer & Schaudinn). In Spitsbergen a dead specimen was picked up in Bell Sound in 1881; another was obtained by a Norwegian ship in 1891 and is now in Tromsö Museum; while a third was seen near Amsterdam Island on 4 July, 1900 (Kolthoff). Dr. Van Oordt saw one at Cap Boheman on 26 June, 1921.

42. **Scolopax rusticola** L. Woodcock.

Koenig records remains of a Woodcock at a fox-earth in Sassen Bay in 1907.

43. **Sterna paradisæa** Brünn. Arctic Tern.

Breeds commonly on the north and north-east coasts of Bear Island and more sparingly on the north-west. On

Spitsbergen it is common, breeding in colonies on many of the islands, even in the extreme north. It also nests on shingle-banks and spits on the mainland in one or two places. We found it plentiful on Moffen Island on 8 July. At Liefde Bay specimens were observed and shot on the breeding-ground early in July, still retaining more or less white on the forehead and with black beak and blackish-red feet. In the great majority of cases the clutch consisted of two eggs only, but we met with a few instances in which three had been laid.

44. **Xema sabini** (Sabine). Sabine's Gull.

Nansen saw one at 83° N. off Spitsbergen in July 1896, and Römer and Schaudinn on 8 August, 1898, found about eight pairs apparently breeding on Stor-Oën, east of North-East Land. Koenig's expedition obtained a pair of birds and two eggs on a flat island in Kings Bay on 6–7 July, 1907, and W. S. Bruce also recorded one bird in the same year from Prince Charles Foreland. In 1908 one was shot by Koenig off the Foreland on 19 June and another seen in Sassen Bay on 22 June. J. S. Huxley reports a small gull, seen at close range on 7 July, 1921, near Richard Lagoon, Prince Charles Foreland, which may have been an immature bird of this species.

[**Rhodostethia rosea** (MacGill.). Ross' Gull.

Reported as seen north of Spitsbergen by Ross and in Torell's work from the Hinlopen Straits, but probably due to mistaken identification.]

45. **Larus argentatus argentatus** Pontopp. Herring-Gull.

One obtained 1 July, 1908, near Walrus Harbour by Koenig's Expedition, the only record.

46. **Larus marinus** L. Great Black-backed Gull.

Near Bear Island, Koenig saw one on 11 June, 1908. In 1921 we met with two pairs evidently breeding on skerries north of Walrus Harbour, and on 19 July, Longstaff and Powell took the boat out to the nearer rock and obtained

the breeding pair as well as two large young in down and an addled egg.

Pike's record of immature birds in September 1888 at Smeerenberg Bay probably refers to young *L. hyperboreus*.

47. **Larus hyperboreus** Gunn. Glaucous Gull.

On Bear Island breeds in considerable numbers above the colonies of Guillemots and Fulmars all round the southern part of the island, practically all the birds seen being in fully adult plumage. The breeding-season is curiously variable, but in each colony the birds apparently nest at approximately the same time, so that while most of the eggs in one part of the cliffs are almost hatching, those in another colony, less than a mile distant, may be nearly fresh. Koenig also reports nests on the east side of the island at the foot of the cliffs, not far above high-water mark. On Spitsbergen, though widely distributed, this species is less plentiful and nests at times on the Eider holms and pinnacles of rock or along ledges near the top of cliffs. Out of about 150 nests examined none contained more than three eggs, but clutches of four have been recorded by Römer & Schaudinn, Koenig, and Nordenskiöld.

48. **Rissa tridactyla tridactyla** (L.). Kittiwake.

On Bear Island breeds in large numbers in colonies on the sea cliffs, in close companionship with the Guillemots. Great flocks may be met with inland, bathing in the fresh-water lagoons and collecting moss for their nests. It was, however, surprising to find a large colony nesting on a high range of cliffs together with Fulmars and apparently also Glaucous Gulls, quite out of sight of the sea, on 17 June, 1921. No nests examined on Bear Island contained more than two eggs. In Spitsbergen many colonies exist on cliffs, generally in company with other rock-breeding species.

49. **Pagophila eburnea** (Phipps). Ivory Gull.

Only once noted on the drift-ice near Bear Island, on 11 June, 1908 (Koenig). On Spitsbergen the only reliable

breeding records are those from the Stor-Oën, off the east coast of North-east Land, where large numbers were found nesting in August 1887 : on White Island (Giles Land), also apparently a large colony; and Abel Island. Smaller colonies have also been reported from Jena Island, Cape Hammerfest, Cape Weissenfels (Swedish Foreland), and King Charles Land. Malmgren reported a colony in July 1861 in Murchison Bay, apparently since deserted, and Eaton speaks of nests (not examined) at Wijde Bay and Cape Oetker. As this species depends to a great extent for its food on the presence of ice, its breeding-grounds will always be difficult to reach till late in the season, and the presence of occasional birds with incubation patches in the height of the nesting season is no proof of breeding in that district. Our exploring party met with one bird flying up the Oxford Glacier, on 16 August, about 20 miles from the sea in either direction, and another was seen two days later. Evidently they fly across from the east side (Stor Fjord and Olga Strait) to the west side (Bell Sound, Ice Fjord, Red Bay, Liefde Bay, etc.).

50. **Stercorarius skua skua** (Brünn.). Great Skua.

One obtained in 1898, now in Göttingen University Museum. Römer and Schaudinn report a pair seen on Swedish Foreland in 1898, and Koenig's expedition observed single birds in Van Keulen Bay (23 June, 1907) and Kings Bay (26 June).

51. **Stercorarius pomarinus** (Temm.). Pomatorhine Skua.

Recorded from Bear Island and its neighbourhood on several occasions, but there is no proof of breeding there. On Spitsbergen it has occurred irregularly, occasionally in considerable numbers, as in August 1889 when Walter met with flocks of 5 to 15 off Barents Land. Possibly it may breed, but at present we have no direct evidence. Huxley records a pair of Skuas, apparently of this species, seen on 8 July in Foreland Sound.

52. **Stercorarius parasiticus** (L.). Arctic Skua.

Breeds commonly in the valleys on Bear Island, the light-breasted form greatly predominating. On Spitsbergen it is somewhat local, but in some districts common, as at the north end of Prince Charles Foreland. None of the birds met with on Moffen Island appeared to be nesting there, but on the islands in Liefde Bay this Skua was breeding and fairly common. Two clutches taken on Bear Island on 17 June must have been incubated for ten days or so.

53. **Stercorarius longicaudus** Vieill. Long-tailed Skua.

Occasionally observed on Bear Island, where Koenig obtained a juvenile female apparently of this species. On Spitsbergen it is not rare, though far less numerous than the Arctic Skua. In Advent Bay it seems to be particularly common. Here Koenig collected 10 specimens on 17 July, 1907, and we saw several on 18 July, 1921. With regard to its breeding, there is still much uncertainty, and the statement in 'The Ibis,' 1897, p. 595, cannot be accepted without reserve. At Liefde Bay a pair showed some signs of attachment to a particular locality, and a young bird of the previous year was obtained on 4 July, 1921, but a pair at Bruce City showed no signs of nesting up to the end of July, and then disappeared.

54. **Alca torda** L. Razorbill.

A few probably breed in the great bird colonies at the south side of Bear Island, where they have been seen on several occasions, and Koenig obtained a male on 30 June, 1908. On Spitsbergen it has been definitely recorded by Bruce from Prince Charles Foreland.

55. **Uria troille troille** (L.) and var. **ringvia** Brünn. Common Guillemot.

On the cliffs from Gull Island and South Harbour to Needle Rocks (Bear Island) vast numbers of Guillemots breed. Of these, *U. lomvia lomvia* is the more numerous, but the ringed variety of the Common Guillemot is not uncommon, and is much more numerous than the typical form. In some

cases all three may be found on the same ledge, crowded together, and rendering the authentication of the eggs somewhat difficult, but there is a distinct tendency for the ringed birds to associate in little groups among the far more numerous Brünnich's Guillemot. Nearer Cape Bull, Paget Wilkes met with a colony of Common Guillemots breeding on the flat top of a stack in great numbers, while Brünnich's Guillemots were breeding on the flanks of the colony. The eggs in this isolated colony were much further advanced in incubation than others from the cliffs farther east. From Spitsbergen the only positive record is that of one obtained in August 1898 on Barents Island by the Prince of Monaco, though possibly one was shot by Herr Dreyer in 1881.

56. **Uria lomvia lomvia** (L.). Brünnich's Guillemot.

Breeds in enormous numbers on the cliffs of the south coast of Bear Island as already mentioned. In Spitsbergen there are also many large colonies, but it is very questionable whether it is, as stated by Koenig and Le Roi, the commonest kind there excepting the Little Auk, as the Fulmar is much more generally distributed and breeds inland as well as on the coast.

57. **Uria grylle mandtii** Mandt. Mandt's Guillemot.

Small colonies of breeding birds scattered along the cliffs of the southern part of Bear Island, where a bird was found sitting on two eggs on 16 June, 1921. In Spitsbergen it is widely distributed, ranging north even to Ross Island and Charles XII Island, and it is not uncommon to find several pairs breeding in cliffs a mile or two distant from the sea.

58. **Plotus alle** (L.). Little Auk.

Breeds in small colonies at many points round the southern coast of Bear Island, but not in great numbers. Here we obtained fresh eggs on 16 June, 1921. In Spitsbergen it is much more numerous and is probably the commonest bird, though not nearly so general as the Fulmar. Some colonies, as for example those at Advent Bay and Magdalena Bay, are of enormous extent, and the breeding-range extends north

to Ross Island and east to the Ryk Ys Islands. Both sexes take part in incubation and are very reluctant to leave the egg.

59. **Fratercula arctica arctica** L. Norwegian Puffin.

The researches of Koenig and Le Roi have shown that the Bear Island Puffin belongs to a smaller billed and shorter winged race than the Spitsbergen form, apparently identical with that breeding on the coast of Norway. It is not numerous, but a few pairs nest in the cliffs from Mount Misery southward and also on the north side near Herwig Harbour. Koenig obtained a single male of this form at Van Keulen Bay on 14 June, 1908, and among those shot by our party at Vogel Hoek, Prince Charles Foreland, was another small-billed and short-winged bird (1 July, 1921).

60. **Fratercula arctica naumanni** (Norton). Spitsbergen Puffin.

Not very numerous, but breeds in the cliffs at many points along the west and north-west coast, and only occurs occasionally on the east side. No eggs of this race appear to have been previously taken in Spitsbergen, and the breeding habits seem to differ somewhat from those of its southern relative, for no attempt is made as a rule to burrow into the ground, the single egg being laid in a cleft or recess in the face of a cliff, between masses of rock. It is also a late breeder, for eggs taken at Cloven Cliff on 9 July, and one from Anser Island on 17 July, were only slightly incubated.

61. **Lagopus mutus hyperboreus** Sund. Spitsbergen Ptarmigan.

Of the distribution and status of this species there is still much to be learned. Most notices of its appearance are from the west coast, but it has been recorded from North-East Land, Barents Island, Edge Island, etc. Apparently in 1920 it was present in considerable numbers at Ebba Valley (Klaas Billen Bay), and large numbers were shot there in that year; but though feathers and droppings were to be seen in hundreds along the sides of the valley, and in one case the

remains of a nest with fragments of shells was discovered, we saw no sign of a living bird. The stupid tameness of this species threatens its extermination, unless it is able to retain a footing on the east side. Possibly the open winter of 1920–21 with the comparative absence of snow, induced the birds to leave their old haunts and migrate to fresh fields, unless, indeed, it has been locally exterminated.

IX.—*Species and Subspecies.*

By Percy R. Lowe, M.B.O.U.

One of the chief reasons which induced me, in collaboration with Mr. Mackworth-Praed (Ibis, 1921, pp. 344–347), to chase the hare started by Mr. Loomis in the pages of 'The Ibis' (1920, pp. 964–966) on the subject of subspecies, was to call attention to the opinion held by us, that ornithologists in general did not apparently sufficiently distinguish between mutational or discontinuous variations which characterised one form of subspecies and continuous or environmental variations which characterised another form.

If I may venture, in flat defiance of the example of the angels, to plunge once more into the discussion, I would like to give one or two concrete examples by way of illustrating what are my own personal views on the matter.

A. As examples of discontinuous or mutational subspecies I may quote the following, taken at random:—

(1) *Pluvialis apricarius oreophilus* Meinertz. which has just recently been described (Bull. B. O. C. vol. xlii. 1921, p. 6).

(2) *Podiceps cristatus infuscatus* Salvad.

(3) *Querquedula discors albinucha* Kennard, Auk, xxxvi. 1919, pp. 459–460.

Examining these in detail and confining myself to a single differential character in each, we find that:—

In *Pluvialis a. oreophilus* the narrow but well-defined black frontal band present in *P. a. apricarius* is absent in the British breeding race (*cf.* Bull. B. O. C. *loc. cit.*).

In *Podiceps cristatus infuscatus*, as pointed out by Mr. Claude Grant (Ibis, 1915, p. 51), the white superciliary streak present in *P. c. cristatus* (Europe) is absent in the African race, a character which is as noticeable in winter as in summer dress. This is well illustrated in a woodcut accompanying the article.

Querquedula discors albinucha is similar to *Q. d. discors* except that, in the nuptial plumage of the male, the crescentic white patch in front of the eye is continued over the eye in a thin superciliary line down to the nape, where it meets the line from the opposite side to form a white nuchal patch.

This Teal breeds commonly in Louisiana, possibly as far east as Florida, also in Texas and Mexico, and begins nesting before the Blue-winged Teal departs for the north.

A good illustration is given in the reference quoted above.

In these examples, then, we find that the race, variety, or subspecies—call it what you will—differs from the typical species in the presence or absence of well-marked colour-pattern characters. We find that certain qualitative changes or characters have been introduced. The fact that they are small differences does not matter in the least; for the important point about them is that they are definitely and obviously heritable characters, which, by no stretch of the imagination, can be conceived of as co-related with adaptation.

The case of the Louisiana Teal is particularly interesting, as the character has apparently not as yet been completely and permanently established. To be so definitely and concisely repeated in succeeding generations there is only one conceivable way by which such characters could have originated; there must have been some change, some "jugglery"—call it what you will—initiated *de novo* in the chromosomes or chromomeres, or at any rate in the fertilised ovum. Moreover, for the continued presence, or the continued absence, of such mutational characters in such differentiated races the only possible explanation would

seem to be, that, having once arisen, they were able to persist by virtue of this gametic origin plus the additional fact that they occurred in isolated geographical populations, or in populations whose breeding-seasons did not synchronise with those of the typical race. Furthermore, not being blatantly or obviously out of harmony with their surroundings they were "good enough," and there was no obvious excuse for Natural Selection to interfere.

To regard such colour-pattern mutations as having been directly initiated and gradually perfected by any form of environmental influence seems to denote little more than a simple faith in a purely theoretical conception, for which almost untold ages and far too great a strain on the scientific imagination are necessary. It seems equally inconceivable to regard them as having arisen in response to any adaptative call, although to make this assertion is not to deny that many colour-patterns may be adaptative.

Mr. Stuart Baker, in a highly interesting and important revision of the genus *Gennæus* (Journ. Bombay Nat. Hist. Soc. xxiii. 1915, pp. 658–689), calls attention to the three dominant types of colour-pattern in this group of pheasants, obtaining respectively in *G. horsfieldi*, *G. lineatus*, and *G. nycthemerus*, and dwells upon the fact that the obviously contrasted differences in colour-pattern of the three forms are directly due to three different forms of environment. I find it as equally impossible to regard the beautifully etched vermiculations on the dorsal surface of *G. lineatus* as having originated in either direct or indirect response to the type of environment described as "hills of moderate height covered with mixed forest, bamboos, and grass land, with a moderate rainfall" (the last in contradistinction to "a heavy rainfall" in the case of *G. horsfieldi*), as to believe that the peculiar physiognomy of Neanderthal man arose in response to anything co-related with the physical environment to which he was exposed in Pleistocene Europe. It is, I imagine, as certain as anything can be, that Neanderthal man owed his physical features to a complex of factors which he inherited in the only way we know

of, from his forbears, human and otherwise; and I believe it is as certain that the finely vermiculated markings of *G. lineatus* were derived in like manner from its various progenitors. It is important to dwell upon these points in order to make evident the differences between mutational and environmental subspecies. It seems well-nigh inconceivable, even as an abstract proposition, to picture Natural Selection seizing upon a small favourable variation here and another there, in the direction of fine vermiculations which harmonised with the immediate environment, and finally building them up into the perfect article by the elimination of the unfavourable variations *. Consider for a moment the various types of environment to which *Phasianus colchicus* has been exposed for a thousand years in the British Isles.

We know that the old English Pheasant was introduced from the banks of the river Phasis in Colchis (hence the name *Phasianus colchicus*), and very probably by the Romans (*cf.* Newton's 'Dictionary of Birds'). Are we to believe that the environmental conditions obtaining in southern Russia are so precisely identical with those in the British Isles that in a thousand years or more no perceptible change in colour-pattern would have been brought about; or was it not more likely that the "English Pheasant" remained unchanged, and would have continued to remain unchanged, homozygous as every individual was, until crossed with newly introduced races from still farther east, such as the Ring-neck?

"Pure-bred" as *P. colchicus* was when introduced by the Romans, I cannot but believe that it would have remained "pure-bred" to the last if it had been left alone, since there is no evidence that there was any innate tendency to variation in its constitution, or any very likely natural facilities for adequately isolating such variations if they arose.

* Note.—On the contrary, there would appear to be little doubt that *G. lineatus*, along with most of the subspecies of the genus *Gennæus* which have been described from Burma and adjacent countries, is a mendelian segregate, and the most likely explanation of its origin would appear to have been a crossing between two such forms as *G. horsfieldi* and *G. nycthemerus* (*cf.* J. C. Phillips, 'Genetics,' vi. 1921, p. 376).

By the phrase "remaining unchanged" I am not, of course, referring to mere depth of colour-tones produced by chemical processes in the pigment contained in the feathers as the result of external climatic agencies, but to actual differences in colour-pattern.

But to return once more to the examples of specific variation which we have quoted at the outset of these remarks, and which have appeared to me to be convenient examples of what may be termed mutational subspecies as opposed to environmental, there would undoubtedly seem to be a practical difficulty in the matter of nomenclature in connection with them. For if we roundly regard them as "species" our nomenclature will fall short of indicating (as trinomials do so conveniently) their undoubted genetic relationships to the typical races—*Podiceps cristatus infuscatus*, for instance, being undoubtedly genetically allied to *P. c. cristatus*.

My meaning may be rendered clearer by what immediately follows.

Mr. Bonhote in his letter to 'The Ibis' on "Subspecies and their part in Evolution" (Ibis, 1921, p. 721) writes, as follows:—"I had always understood that a true subspecies was always supposed to be restricted to the latter cause [*i. e.* environment], and certainly think it should be so." This may be so or not; certainly it is not followed out in practice by the majority of systematists; but if it is so, it follows that Mr. Bonhote would either consider that the examples I have quoted owe their origin to environmental causes (an opinion which with his experience of breeding mammals and birds I should hesitate to attribute to him), or that they are not "true subspecies," and that in so writing them down systematists have erred. If this latter conclusion is correct, the question at once arises, *what are they?* The question is a practical one, apart from the more deep-seated one which underlies our recognition that this kind of subspecies differs from a purely environmental subspecies, such, for example, as a dark form originating in a damp humid climate.

The only solution which occurs to me at the present

moment would be to call them "geographical species." The name is one which is accurately descriptive, and it brings out the fact that such specific variations have "equal rank" with "species"—that they might be, in fact, regarded as "species," even using that word in its nomenclatural and systematic sense, and not *sub*species. For it may not be needless to point out that we have no knowledge to guide us to a conclusion as to whether, for example, the European race of Great Crested Grebe was differentiated prior to the differentiation of the African, or *vice versa*, or whether they were differentiated simultaneously from a common type. The solution perhaps lies rather in the probability that there was an extension of range from one continent to the other with subsequent differentiation in the new area occupied—but this by the way.

For, in passing on, there is another point which I should like to dwell on, viz., that if there is any excuse whatever for regarding subspecies as "incipient species" we must surely confine such a term to the kind of "subspecies" which I have been discussing, and by no manner of means to the kind which Mr. Bonhote refers to as a "true or environmental subspecies"; for since in an "environmental subspecies" it is only the soma which is affected, unless one believes in the inheritance of acquired characters it is difficult, nay impossible, to conceive how such subspecies can play any part in the generally accepted scheme of evolution. But granting this as approximating very nearly to what is almost universally held to be the truth, we arrive at the consideration of our second group (viz. B. Environmental subspecies), and find that it is mostly comprised of numbers of trinomialised variations for which some such description as the following might very well be taken as a standard :—

"— — — differs from typical examples in being of a distinctly darker shade of —— on the mantle and coverts, in being slightly paler below, and in having the wing and tail measurements averaging — mm. longer or shorter," the variation obviously being the direct result of a more humid, more arid, more sunlit, more sunless, or more or less adjectival locality.

Of this kind of variation, and I am not doubting the utility of their recognition so long as we do it wisely, numerous examples will occur at once to anyone engaged in the work of systematic ornithology. I would suggest the Paridæ for consideration as the first group to occur to me; but would more particularly notice an example which I have already alluded to elsewhere.

In the Bermudas, the Goldfinch (*Carduelis carduelis*) would appear to have established itself in the islands somewhere about the year 1875, cage birds having apparently been introduced either from the Canaries or Europe. It would now appear to be of a darker shade of coloration on the upper parts than typical examples, and for this reason has been separated by Mr. Kennedy as a subspecies under the name of *C. carduelis bermudiana*. In point of fact, it is "as good a subspecies" as scores of others now recognized by all of us. But my point is that this darker coloration is purely a quantitative somatic change due to chemical or actinic factors in the environment, and consequently would not be inherited; so that if the bird were transported to its original habitat the coloration would revert to its former tones. In this respect, if my contention is true, it differs fundamentally from the case of any of the examples which I have quoted as characteristic of "mutational subspecies" or "geographic species."

Want of space forbids my enlarging on this subject by continuing to quote further examples or to allude to the vexed question of intermediate and island forms, many of which last are undoubted subspecies.

The whole subject is further complicated by the fact that in any given subspecies one may meet with purely somatic or environmental characters superimposed upon mutational or gametic characters. To attempt to deal in anything like an adequate way with such a difficult problem as the whole question of subspecies and their classification involves, is impossible at the present time; but these few lines are written in a tentative spirit in the hope that they will lead to concentration of thought along the lines indicated.

X.—*Obituary.*

Joel Asaph Allen.

We regret to learn of the death of Dr. J. A. Allen, Dean of the Scientific Staff of the American Museum of Natural History, which occurred at Cornwall on Hudson, New York State, on 29 August, 1921, when he had reached the age of eighty-three years.

Dr. Allen was born at Springfield, Massachusetts, in 1838. His father, Joel Allen, was a farmer of old New England stock, and his upbringing was rigid and puritanical. He was educated at local schools and had no special advantages, and it was not until he came under the influence of Louis Agassiz in 1862 that his taste and craving for natural history were able to get full vent. He accompanied Agassiz to Brazil in 1865, and in subsequent years he made several exploring and collecting expeditions to the then wild and unknown portions of the western and southern States. In 1872 he became Assistant in Ornithology in the Museum of Comparative Zoölogy at Cambridge. This position he retained until 1885, when he was appointed Curator of Birds and Mammals in the American Museum of Natural History at New York. Of late years his interests and writings have been almost entirely concerned with Mammals, but his output of ornithological work was very considerable, and the number of ornithological papers recorded in a special volume of autobiography and bibliography published in 1917 by the American Museum amounted to 970.

Among his earlier more important papers is that on the Mammals and winter Birds of eastern Florida (1871), which won him the Humboldt Scholarship and became a classic, and that on the collection of Brazilian birds collected by the H. H. Smith Expedition, 1891–92.

To Dr. Allen is largely due the accuracy and high standard of literary form shown by the pages of the 'Auk,' of which he was the editor for its first 28 years, from 1883 to 1912, and also of its predecessor the 'Bulletin of the Nuttall

Ornithological Club,' as well as the three editions of the A. O. U. Checklist. He also edited twenty-two volumes of the 'Bulletin of the American Museum of Natural History,' and several of the Memoirs of the same Institution.

Mr. Allen was a Founder Fellow of the American Ornithologists' Union and President for the first seven years of its existence (1883–1891). He was elected a Foreign Member of the B. O. U. in 1890 and an Honorary Member in 1907, and was the recipient of many other honours and distinctions.

Personally Mr. Allen was of a most shy and retiring nature. He never appeared on the lecture platform and seldom or ever spoke or attended the meetings of scientific societies, but he was a most kind and sympathetic colleague and much beloved and respected by all his fellow-workers and pupils. At the meeting of the A. O. U. at Philadelphia in November last a memorial address was delivered by his former assistant and associate, Dr. Frank M. Chapman, and will doubtless duly appear in the pages of our contemporary.

In addition to this, a special volume was published by the American Museum in 1916, entitled 'Autobiographical notes and a Bibliography of the Scientific Publications of Joel Asaph Allen,' containing full particulars of his activities, with an excellent portrait. It is from this work that most of the facts here recorded have been obtained.

Sergius Nikolaevich Alphéraki.

The news of the death of Mr. Alphéraki, of Petrograd, which took place in 1918, was briefly mentioned in the last number of 'The Ibis.'

Born in 1850, Alphéraki was primarily an entomologist, and published a number of papers chiefly on Lepidoptera. To ornithologists he is best known as the author of a monograph of the Ducks ('Utki Rossii') and the Geese ('Gusi Rossii') of his native land. The latter volume was translated into English by John Marshall, and published by Rowland Ward in 1905 with a frontispiece by Dr. P. P. Sushkin and

twenty-four plates by F. W. Frohawk. It was reviewed in 'The Ibis' (1905, p. 478), and Count Salvadori also contributed some critical remarks on the work (Ibis, 1905, pp. 528–535) which were answered by the author himself in the following year (Ibis, 1906, pp. 389–394).

Mr. Alphéraki was elected a Foreign Member of the Union in 1909 and a Corresponding Fellow of the A. O. U. in 1913. He was also a corresponding member of the Imperial Academy of Sciences at Petrograd and a member of the Imperial Russian Geographical Society.

We are indebted to the 'Auk' for most of the facts in this notice.

Valentin Lvovich Bianchi.

As was stated in the October number of 'The Ibis,' the death of Dr. Bianchi, which occurred at Petrograd on 10 January, 1920, was apparently accelerated by the privations he had suffered. He was born in 1857, and was for many years the Curator of the Ornithological Department of the Zoological Museum of the Imperial Academy of Sciences.

Dr. Bianchi's work was almost entirely devoted to the Palæarctic Avifauna, and he published a large number of papers, mostly in Russian, though a few appeared in German, in the 'Annals of the Zoological Museum of the Imperial Academy.' One of his earliest papers deals with the birds of the western Pamirs, which were explored by the well-known Russian traveller, Grum Grzimailo, in 1884. In 1884–7, Bianchi appears to have himself been in Kansu in western China with Berezowski, and the two travellers prepared a memoir on the birds of that district in 1891, and during the following years many papers came from his prolific pen dealing with the birds of various portions of the Russian Empire. His last contributions which reached this country will be found listed in the 'Zoological Record' for 1916.

Dr. Bianchi was in England in 1905 in order to attend the meeting of the International Ornithological Congress, and

was present at a meeting of the B. O. C. in July, when he spoke on the Dippers, describing a new species, and exhibited the eggs of the Knot. He was elected a Foreign Member of the Union in 1900 and a Honorary Member in 1914.

William Spiers Bruce.

By the death of Dr. Bruce, on the 29th of October last year, a remarkable personality has been removed from the ranks of the British Ornithologists' Union. Though his life was mainly devoted to Antarctic and Arctic exploration, yet zoological investigations in those regions had always a very prominent place in his activities; and to both he made contributions of a very important nature. The former brought him many honours, among others the LL.D. of the University of Aberdeen and the Gold Medals of the Royal and Scottish Geographical Societies, and the Livingstone Medal of the American Geographical Society. Dr. Bruce, who was an intimate friend of the writer, was elected a Member of the B. O. U. in 1900, and its aims were always borne in mind. As a member of the Jackson-Harmsworth Expedition to Franz Josef Land in 1896–7, he added the Lapp Bunting, Shore-Lark, Turnstone, and the Purple and Bonaparte's Sandpipers to the avifauna of that Archipelago (Ibis, 1898, pp. 249–277). At Spitsbergen in 1896 he found the first chicks of the Sanderling, which afforded, in addition, the first definite information of the breeding of that bird in Europe. In 1898 he added the Grey Phalarope to the avifauna of Novaia Zemlya. In 1892 he sailed for the far south as the leader of the Scottish Antarctic Expedition. The expedition wintered, and some of its members spent the Antarctic summer of 1893–4 at the South Orkneys, where the great and most valuable collections of birds and their eggs (some of the latter being previously unknown) were obtained and subsequently fully described in 'The Ibis' for 1896 (pp. 145–187, pls. iii.–xiii.). The deep-sea and other marine investigations added over 150 species new to science; and the geographical explorations included the discovery of Coates Land—probably a part of the Antarctic

Continent. On the return voyage he visited Gough Island, never before visited by a naturalist, where he obtained, among other treasures, a new Finch (*Nesospiza goughensis*) and an Albatross which is still an ornithological conundrum.

Dr. Bruce's entire collections, comprising thousands of zoological and geological specimens, were presented by him to the Royal Scottish Museum in 1921, and are a lasting monument of his unbounded enthusiasm, and indomitable perseverance under circumstances that would have deterred the vast majority of mankind.

Dr. Bruce died in his fifty-fifth year after a long and distressing illness. His undying affection for the Antarctic is made singularly manifest by his request that he be cremated and his ashes cast on the waters of the South Atlantic, preferably about 10 degrees south and 15 degrees east, a request which will be duly carried out.

William Eagle Clarke.

Charles Barney Cory.

We have to record the death on 29 July, 1921, in his 65th year, of Mr. C. B. Cory, for some years the Curator of Birds in the Field Museum at Chicago.

Mr. Cory was born in Boston, Mass., in 1857 and was the son of Barney Cory. He was educated at Boston and in the St. Lawrence Scientific School of Harvard University, and subsequently went into business in Boston. In 1894 he sold his collections to the Field Museum in Chicago and became Curator of the Department of Ornithology there, a position which he continued to hold until his death.

In his early days Mr. Cory was much interested in West Indian Bird-life; he amassed large collections and visited many of the islands himself, besides employing collectors. The results of his observations and researches appeared in several volumes, the first of which, 'Birds of the Bahama Islands,' appeared in 1880; this was followed by the 'Birds of Haiti and San Domingo,' 1884, and 'A List of the Birds of the West Indies,' which was first published in 1885 and was reissued under a slightly

different title in 1889 and 1892. He also published a large and expensive work in "elephant folio" on the 'Beautiful and Curious Birds of the World.'

After his appointment at Chicago he prepared a work on the 'Birds of Illinois and Wisconsin' and a new edition of his 'Key to the Birds of Eastern North America,' both intended to aid the beginner in identifying his specimens.

Of late years the Field Museum has acquired a good deal of South American material, and Mr. Cory's last work was the preparation of a 'Catalogue of Birds of the Americas,' of which, however, only two parts have as yet appeared (see Ibis, 1918, p. 500 and 1921, p. 156). We hope that the manuscript of the succeeding parts is sufficiently complete to allow them to be published.

Mr. Cory was a Founder Fellow of the American Ornithologists' Union and President from 1903 to 1905. He was elected a Foreign Member of our own Union only last year.

Alfred Grandidier.

From a recent number of 'Nature' we learn of the death of M. Alfred Grandidier on 13 September, 1921, at the age of eighty-four years.

Born in Paris in 1836, M. Grandidier began his travels at the early age of twenty, when he accompanied his elder brother to South America, where he spent several years exploring and collecting. In 1863 he started off for the East, intending to make a study of Buddhism in Ceylon and Tibet. Illness caused him to change his plans, and he proceeded to Zanzibar and thence to Madagascar, which thenceforward became the subject of his life-work. He paid two other visits—in 1866 and 1868—to that island, after which he settled down in Paris to publish the results of his labours. His great work 'L'Histoire politique, physique et naturelle de Madagascar' is still incomplete, some twenty-five volumes out of the forty planned having been issued. It is hoped that his son will continue and finish his work.

The volumes dealing with the birds are four in number—one of text and three of plates ; they were written by Prof. Alphonse Milne-Edwards and M. Grandidier in collaboration, and form a most complete account, splendidly illustrated, of the strange avifauna of that island. They were published at intervals between 1876 and 1885.

M. Grandidier was a member of the Academy of Sciences since 1885, was President of the Paris Geographical Society from 1901 to 1905, and received their Gold Medal in 1872. Only so recently as last July he was made Commander of the Legion of Honour.

John Macoun.

We regret that we have omitted to chronicle the death of Prof. John Macoun, who has been a Colonial Member of the Union since 1905. It occurred at Sidney, Vancouver Island, British Columbia, on 18 July, 1920, when he was a little over eighty-eight years old.

Professor Macoun was born near Belfast, Ireland, in 1832, and emigrated to Canada in 1850. For some years he taught school and was at one time professor of natural sciences at Albert College, Belleville, Ontario. In 1882 he was appointed naturalist to the Geological Survey of Canada and held that post until his death, though he had retired from active work in connection with the position some eight years previously and had settled in Vancouver Island.

Prof. Macoun, while best known as a botanist, was one of the old school of naturalists whose labours embraced the whole field of natural history for his province. During his many journeys, which embraced every part of the Dominion from the Yukon to Nova Scotia, he gathered great collections of animals and plants, now housed in the National Museum and the National Herbarium at Ottawa. His best-known work in Ornithology is his 'Catalogue of Canadian Birds' published in 1900–1904, and reviewed in 'The Ibis' (1901, p. 505 ; 1904, p. 157 ; 1905, p. 281). Of this a French translation was issued in 1916, but unfortunately without any additional information.

Prof. Macoun's eldest son, James M. Macoun, also a botanist and attached to the Geological Survey, predeceased him; his second son, Mr. W. T. Macoun, is the Dominion Horticulturist, and survives him.

XI.—*Notices of recent Ornithological Publications.*

Chapin on African Birds.

[Notes on a new Ox-pecker and other little-known Birds of the Congo. By James P. Chapin. Amer. Mus. Novit. no. 17, 1921, pp. 1–16.]

Among his Congo collections Mr. Chapin has found a new Oxpecker related to *Buphagus africanus*, but darker and smaller. He and his companion Mr. Lang came across it at Zambi on the lower Congo, where it was commonly seen about the domestic cattle. He names it *Buphagus langi* and illustrates the difference between the new and the two well-known species in a neat sketch. He further proposes the subgeneric term *Buphagoides* to distinguish the Red-billed species *B. erythrorhynchus*.

His next note is on a Sunbird, *Nectarinia congensis*, described by van Oort in 1910, and not apparently met with since except by himself. He obtained a good many examples along the middle Congo.

The affinities of *Neolestes* and *Nicator* are discussed in the third note. These genera have been always associated with the Laniidæ, though undoubtedly aberrant. Mr. Chapin without hesitation assigns the first to the Pycnonotidæ, while he finds *Nicator* stands somewhat apart with relations to the Shrikes, the Bulbuls, and especially to *Bleda*. The juvenile plumage of *Sigmodus*, to which another sketch is devoted, is very remarkable and most unlike that of the Shrikes, with which the genus is often associated. He states "as passerine families go the Prionopidæ seem to be well marked off from the true Shrikes, but the affinities to the two typical African genera of some other forms usually associated with them seem to me most questionable."

A curious Cliff-Swallow discovered by Preuss in Cameroon and named by Reichenow *Lecythoplastes preussi* has never been rediscovered until Mr. Chapin met with a considerable flock at a rest-house in the upper Welle District. Though the two localities are 1300 miles apart Mr. Chapin was unable to find any differences of importance, and he believes that the Welle and the Cameroon birds are identical.

A final note is a useful list of species whose range extends from the Cameroon across the Congo forest to upper Welle and even the Lake regions beyond.

Chapman on new South American Birds.

[Descriptions of proposed new Birds from Colombia, Ecuador, Peru, and Brazil. By Frank M. Chapman. Amer. Mus. Novit. no. 18, 1921, pp. 1–12.]

This paper contains descriptions of new forms of South American Birds, which the author's studies in the British Museum during May and June of last year has enabled him to make, after comparing material in the American Museum with that in our own. Of one form indeed, *Leptasthenura striata cajabambæ* from Peru, the type is actually in the British Museum.

Among the other birds described are: *Nothocercus fuscipennis*, *Penelope barbata*, *Picumnus parvistriatus*, *Thamnophilus zarumæ*, *Leptasthenura xenothorax*, *Automolus celicæ*, and *Sporophila insulata*, all described as new species, as well as a number of others described as subspecifically distinct only.

Chapman on Peruvian Birds.

[The Distribution of Bird Life in the Urubamba Valley of Peru. By Frank M. Chapman. Bull. U.S. Nat. Mus. no. 117, 1921, pp. 1–138; map and eight plates of photographs.]

This essay by Dr. Chapman forms part of the results of an expedition organized by Yale University and the National Geographical Society of America under the direction of

Prof. Hiram Bingham to explore the Urubamba Valley of Peru and to make a thorough survey, not only of its archæology but also of its geology and biology.

The task of making collections in vertebrate zoology was entrusted to Mr. Edmund Heller, who is well known as one of the members of the Roosevelt expedition to eastern Africa. He was in the field from April to November, 1915, and obtained 757 bird-skins. The following year Mr. Chapman himself made a hasty trip, lasting only twenty-four days, to the same region, and obtained 744 specimens.

The valley of the Urubamba river, which forms one of the principal headwaters of the Amazon, begins at the La Raya pass, 14,150 feet, some distance north of Lake Titicaca, and from thence to Santa Ana, 3480 feet, a distance in a straight line of about 300 miles, it passes from the Puna or Paramo zone (above the limit of arborescent vegetation) through the temperate, subtropical, and tropical zones with arid and humid sections in each, and a considerable number of pages are devoted by Dr. Chapman to a discussion of these zones, their relations, and whence they derived their fauna, and their comparison with similar zones in Colombia.

The second portion of the paper contains a distributional list of 380 species and subspecies known from the Urubamba, and mentions those collected many years ago by H. Whitely and reviewed by Sclater and Salvin (P. Z. S. 1869, p. 151), and subsequently by J. Kalinowski which were reported on by Berlepsch and Stolzmann (Ornis, xiii. 1906, pp. 63–133).

Three new subspecies are described in the present paper, and thirteen others were previously described in the Proceedings of the Biological Society of Washington or in the Bulletin of the American Museum. We need hardly add that this is a most important paper, not only for specialists in neotropical birds but also for all those interested in the problems of geographical distribution.

Crandall on the Blue Bird of Paradise.

[The Blue Bird of Paradise. By Lee S. Crandall. Zool. Soc. Bull. New York, xxiv. 1921, pp. 111–113; col. pl.]

The Zoological Park at Bronx, New York, has been so fortunate as to acquire recently a live pair of Prince Rudolf's Blue Bird of Paradise (*Paradisornis rudolfi*), and Mr. Crandall describes in a short note the extraordinary display antics of the male with the aid of a beautiful illustration in colour by Mr. Herbert Kunth. During this performance the bird firmly grasps his perch with his powerful feet, and with legs extended to the utmost hangs head downwards. Viewed from the front, the plumes and the bird itself form an inverted triangle, the inverted apex of which is the black breast of the bird bordered above by a narrow band of dull red formed by the feathers which ordinarily clothe the abdomen; beyond, the blue and yellow of the plumes complete the triangle in the middle and sides; while the long pendent "wires" rise above to half their length and then droop gracefully downwards on either side. During the display, which lasts for several minutes, the body is moved backwards and forwards with the hips as a fulcrum, and this rapid movement causes waves of colour to run over the entire triangle. Truly a most marvellous display, probably the most brilliant to be found in all the range of bird-life. We trust it may not be long before the Zoological Society in London may be able to obtain a pair.

Dwight and Griscom on the genus Atlapetes.

[A revision of *Atlapetes gutturalis* with descriptions of three new races. By Jonathan Dwight and Ludlow Griscom. Amer. Mus. Novit. no. 16, 1921, pp. 1–4.]

In this short paper the races of *Atlapetes gutturalis*, a dull-coloured Finch inhabiting the mountains of Central America from Guatemala to Colombia, are reviewed. *A. g. parvirostris*, Costa Rica, *A. g. fuscipygius*, Nicaragua, and *A. g. griseipectus*, Guatemala, are described as new.

Gladstone on the Value of Birds.

[The Value of Birds. By Hugh S. Gladstone. Pp. 1–30. Dumfries (Standard Office), 1921. 8vo.]

Mr. Hugh Gladstone has here reprinted an address which he read before the Dumfriesshire and Galloway Natural History and Antiquarian Society on 15 October, 1920. After an introduction dealing with the various ways in which birds may be of economic value to man — as messengers, as food, and as adornment, — he discusses their extrinsic value as regards the food they themselves consume. He treats at considerable length of the great difficulty in the case of many species of striking a value between the harm that they do and the benefits they confer on the gardener and agriculturist, and the great danger of drawing conclusions from isolated observations. Because a Long-eared Owl has once been observed taking a young Pheasant from the rearing-field there is no reason to condemn all Long-eared Owls, nor because a Wagtail has been noticed taking young Trout from a hatchery in Bute in December are we to ban all Wagtails. Only by laborious and continuous investigation of the stomach-contents of a species throughout the year and throughout different parts of the country, can a just appreciation of its economic status be acquired.

Mr. Gladstone pleads for the institution of an Ornithological Bureau under the Ministry of Agriculture to deal with this matter continuously and constantly.

The greater part of the address is devoted to a review of the present economic status of all our commoner British Birds, arranged in systematic order compiled from the best and latest investigations, and this is followed by a useful bibliography of the recent literature dealing with the subject.

Grote on African Birds.

[Ueber einige Vögel der deutschostafrikanischen Südküste. Von Hermann Grote. Journ. Ornith. 1919, pp. 298–302.]

[Zur Kenntniss der geographischen Formen des *Alseonax murinus*. Id. Orn. Monatsber. 1920, pp. 112–115.]

[Vögel der Ukerewe-Insel des Victoria-Nyanza. Id. Journ. Ornith. 1921, pp. 406–426.]

The first paper on the list is a supplement to a previous one by the same author on the birds of the southern portion of what was previously German East Africa, published in the same journal in 1913–14. It contains comments on several species, and a description of two new subspecies—*Estrilda astrild litoris* and *Lagonosticta rubricata reichenowi*.

The second paper on the list is a review of the subspecies of the little grey Flycatcher, *Alseonax murinus*, which is found throughout the greater part of tropical Africa in mountainous districts under slightly varying forms. The review is based on the examples in the Berlin Museum, though the author allows that it cannot be really satisfactory without a direct comparison with the specimens in the British Museum. One new form, *A. m. subtilis*, from Beni, west of the Semliki river, is here described.

Herr Grote's last paper deals with a considerable collection of birds made by a German missionary, Pater Conrads, in 1908–9, on the large island of Ukerewe in the southern half of Lake Victoria. The collection, consisting of 750 skins representing 174 species, is in the Berlin Museum and is now listed for the first time. The geographical relations of the avifauna are partly with Reichenow's "Great Lakes subregion," partly with the avifauna characteristic of the inland districts of eastern Africa. Another interesting feature of the avifauna of Ukerewe is the large number of Palæarctic wintering-birds, such as *Acrocephalus arundinaceus*, *Budytes flavus thunbergi*, *Hirundo rustica*, *Coracias garrulus*, *Tringa glareola*, and *T. hypoleucos*.

Three new forms had been previously described—*Rhinoptilus cinctus emini* Zedl., *Coliuspasser macroura conradsi*

Berger, and *Tigribaphe leucolæma* Reichw. The last, we are informed, is an example of a *Tigrisoma* from South America, and must have been accidentally included in Father Conrad's collection. It is quite unlike any of the known African Bitterns.

Grote's Translations of Russian Memoirs.

[Ueber die zoologischen (hauptsächlich ornithologischen) Gebiete der Ausserhalb der Tropen gelegenen Teile unseres Kontinents. Von Nikolai Sewerzow. Uebersetzt und eigeleitet von Hermann Grote. Pp. 1–32, portr. München (Dultz), 1921. 8vo.]

[Aus der ornithologischen Literatur Russlands. Berichte und Uebersetzungen. Von Hermann Grote. I.—Dr. B. Shitkow's ornithologische Beobachtungen auf der Samojeden-Halbinsel (Ja-mal). II.—Die Vögel Nordwestrusslands: der Gouvernements Pskow, Nowgorod und St. Petersburg. Pp. 1–32.]

Herr Grote, who was for some time detained in Russia as a prisoner of war and there acquired a good knowledge of Russian, has conceived the happy idea of issuing a series of translations or, rather, full résumés of the more important memoirs of Russian ornithologists which, owing to the language in which they were published, are unknown to the majority of western bird-students.

Of the three, the first contains a short account of the life and writings of the celebrated naturalist Sewerzow, or Severtzoff as he is generally known to English writers—one of the earliest of the Russian naturalists to explore Turkestan and the highlands of the Pamirs and Tian Shan mountain ranges. He lost his life in 1885 when crossing a tributary of the Don not sufficiently frozen over to bear the weight of his carriage. The memoir here translated deals with the subdivision of the Palæarctic region into subregions and zones, and was published in 1877 in Russia in the 'Transactions of the Imperial Russian Geographical Society' (vol. xiii. pp. 125–153). A portrait of Severtzoff accompanies the paper.

The second of Herr Grote's translations deals with the birds of the Jamal or the Samoye Peninsula, that dreary

tract stretching northwards between the Kara Sea and the estuary of the Ob River in north-west Siberia. This land was explored on behalf of the Russian Geographical Society in 1908 by Dr. B. Shitkow, and the results of his journey were published in 1913 (Annuaire du Musée Zoologique de l'Acad. Imp. de St. Pétersbourg, xvii. pp. 311–369). A list of 52 species obtained by Dr. Shitkow is given, and there are some interesting remarks on the vexed question of the validity of several so-called species or races of Geese of the groups *Anser segetum* and *A. albifrons*, and also on the moults of *Lagopus lagopus* and *L. mutus*.

In the third memoir is a review of the literature dealing with the avifauna of the three Governments in north-west Russia, situated in the neighbourhood of Petrograd—those of Pskow, Nowgorod, and St. Petersburg itself. A good deal has been written on these provinces by Bianchi, Sarudny, Büchner, and other well-known ornithologists. A list of 304 species recorded, with indication of the status of each, in each of the three provinces, compiled by Herr Grote from the most recent Russian sources, concludes this very useful series of reviews, which we hope will secure sufficient support to warrant the continuation of the work by the author.

Hartert's Birds of the Palæarctic Fauna.

[Die Vögel der paläarktischen Fauna. Von Dr. Ernst Hartert. Heft. xvi., xvii. (Bd. iii. 2, 3), pp. 1893–2020, 2021–2148. Berlin (Friedländer), Sept. and Nov. 1921.]

We have recently received two more parts of Dr. Hartert's now almost classical book, and we may congratulate him on the completion of the systematic portion of the work. The first of these parts deals with the greater number of the Game-birds and with the Ostriches, thus finishing the review of the birds found in the Palæarctic Region. The species and subspecies which are numbered right through amount to 2200. An introduction to the supplement reviews generally

the progress of our knowledge of Palæarctic Ornithology since 1903, when the work was commenced, and explains the scope of the proposed supplementary parts. The new species and subspecies described since the issue of the several parts will be discussed and criticised, and the more obvious errors which detract from the usefulness of the work pointed out; finally, a review of the boundaries of the Palæarctic Region is given from the Cape Verde Islands, through the Sahara and the Arabian deserts to the Himalayas and China, ending at the mouth of the Yangtzekiang.

The second part here noticed is occupied entirely with additions and corrections, and takes us from the Corvidæ to *Sylvia*.

We understand that one more part will be required to complete the supplement and the index, and that, so far as the author is concerned, the work is completed. We hope soon to receive the last part, and to be able to congratulate Dr. Hartert on having completed his great work with such complete success notwithstanding the many difficulties and trials which have stood in his path.

McGregor on Philippine Birds.

[Birds of Antigua Province, Panay, Philippine Islands. By Richard C. McGregor. Philippine Journ. Sci. vol. 18, 1921, pp. 537–553; 2 maps.]

The Antigua Province, which Mr. McGregor visited in May, June, and July 1918, is a narrow strip along the western side of the island of Panay, backed by a range of mountains of about 3300 to 5000 feet elevation. These are well covered with forest, and the district must enjoy a very heavy rainfall during the south-east monsoon. A list of about ninety species is enumerated, about twenty of which had not previously been recorded on the island. There are field-notes, and in some cases the taxonomy is also discussed. Some nests and eggs were taken, and are here described probably for the first time.

Mathews on Australian Birds.

[The Birds of Australia. By Gregory M. Mathews. Vol. ix. pt. 4 ; pp. 145–192, pls. 418–424. London (Witherby), October 1921.]

The reader of this part of Mr. Mathews's work will at once recognize that the chief points of interest lie in the genera *Orthonyx* and *Cinclosoma*. Their place in any classification is still quite doubtful, so the author sets them apart in the families Orthonycidæ and Cinclosomatidæ, until the anatomy has been further examined. Both are exclusively Australian. The curious Spine-tailed Log-runner of the New South Wales and Queensland scrubs is a well known, though very local, bird which keeps entirely to the ground; the Black-headed Log-runner, separated by Mr. Mathews as *Macrothonyx*, is confined to the Rockingham Bay district, and is more shy and less known. Two points of nomenclature should be noticed—first, that the specific name of *Orthonyx* should be *temminckii* Ranzani and not *maculatus* or *spinicaudus*; second, that its relative in New Guinea is certainly specifically and perhaps generically distinct and may be called *Papuorthonyx*, n. g.

The nearest allies of *Cinclosoma* are discussed on page 182, when the two species (the Spotted and Chestnut-backed Ground-birds) come under consideration. Our knowledge of the one dates from Latham, of the other from Gould; both keep much to the ground, but are perfectly able to fly for moderate distances; in their curious habits and pretty coloration they remind us of the Log-runners, but they are much more widely distributed.

The other species in this part are *Lalage tricolor*, continued from part 3, with an interesting description of its habits and forms; *Karua leucomela*, a bird separated by the author from *Lalage* on structural considerations, where the habits are almost ignored by field naturalists, no doubt on account of their similarity to those of its congener; and two species of Fig-bird (*Sphecotheres*), under a family Sphecotheridæ, closely allied to, if not identical with, Campophagidæ (p. 158), and certainly not to be coupled

with Oriolidæ, as used to be imagined. From one of the Watling drawings Latham named a bird the Maxillary Thrush, but Mr. Mathews has shown in the 'Austral Avian Record' that *Sphecotheres vieilloti* is the correct name of the commoner Fig-bird, and that *maxillaris* does not apply. A second species continues as *flaviventris*, for Latham's *melinus* is not accepted by the author.

There are no new subspecies in this part.

Robinson and Kloss on new Oriental Birds.

[Nine new Oriental Birds. By H. C. Robinson and C. Boden Kloss. J. Fed. Malay States Mus. x. 1921, pp. 203–206.]

[New and known Oriental Birds. By C. Boden Kloss. Ibid., pp. 207–213.]

[Notes on some Oriental Birds. Id., ibid. pp. 214–228.]

The first of the papers cited contains descriptions of nine new subspecies from various localities in Farther India.

In the second paper Mr. Kloss discusses the correct name of the Black Drongo, generally known as *Dicrurus ater* (Hermann), but the name is preoccupied and must give way to *D. microcercus* Vieillot. The type-locality must be, according to Mr. Kloss, Peninsular India, and seven subspecies are recognized. Two of these are new—*D. m. thai* from Tenasserim and Siam and *D. m. javanus* from Java. A review of the Ruby-Cheeks (*Chalcoparia singalensis*) follows. There are six recognizable races, two of which—*C. s. sumatrana* and *C. s. borneana*—are new, from Sumatra and Borneo respectively.

In the third contribution there are discussions on the races of the Oriental species of *Halcyon*, the subspecies of *Chibia hottentotta*, and on Malaysian Crows, and there are remarks on many other disputed points and descriptions of various new races.

Rothschild on New Guinea Birds.

[On some Birds from the Weyland Mountains, Dutch New Guinea. By Lord Rothschild, F.R.S. Nov. Zool. xxviii. 1921, pp. 280–294.]

The Weyland Mountains are a range to the north of the

Snowy Range, explored by the B. O. U. expedition of 1909–1911, and are approached from Geelvink Bay. Here between October 1920 and January 1921 the three brothers Pratt, sons of Mr. A. E. Pratt, made large collections of butterflies for Mr. J. J. Joicey, and at the same time obtained a number of bird-skins of very considerable interest which Lord Rothschild has here described. No fewer than twenty-two species of Paradise-birds were obtained, and a fine series of *Pteridophora alberti* including young males and adult females, hitherto unknown. Another bird of much interest in the collection is the Black Lory, *Charmosyna atrata*. Lord Rothschild cannot make up his mind whether it is a melanistic form of *C. stellæ* or a distinct species. Only one new race is described—*Melirrhophetes belfordi joiceyi*.

Salvadori and Festa on the Birds of Cyrenaica.

[Missione zoologica del Dott. E. Festa in Cirenaica. I. Uccelli. T. Salvadori et E. Festa. Boll. Mus. Zool. Anat. comp. Torino, xxxvi. no. 738, pp. 1–5, 1921.]

It is a great pleasure to receive another paper from our venerable Honorary Member, Count Salvadori. It contains a list of 34 species of Birds collected by Dr. Festa himself in April and May, 1921, in the Italian Colony of Cyrenaica, or Tripoli as it is perhaps better known. Sixteen species are added to the avifauna, including *Passer domesticus*, *Circaëtus gallicus*, *Phœnicopterus roseus*, and *Cursorius gallicus*. The collections were all made at Bengazi or not very far away from that place.

Swann on the Accipitres.

[A Synopsis of the Accipitres. Part I. (*Vultur* to *Accipiter*). By H. Kirke Swann. 2nd edition, revised and corrected. Pp. 1–64. London (Wheldon & Wesley), 1921. 8vo.]

We are glad to learn that Mr. Kirke Swann has commenced the issue of a second and revised edition of his list of the Birds of Prey. The work has been thoroughly revised

and corrected, and we notice that the types of the genera and the type-locality of the species being added, greatly enhances the value of the work. As the first part takes up 64 pages against 38 in the corresponding part of the first edition, it is evident that considerable additions have been made to the letterpress. The recently described forms up to the end of 1920 have been placed in the proper places, and some eight new races are here described for the first time.

Van Oort and the Birds of Holland.

[Ornithologia Neerlandica. De Vogels van Nederland, door Dr. E. D. van Oort. Afl. 5-9, pp. 121–152, pls. 41–87 & 91–93. 's Gravenhage (Nijhoff), 1920–1921. 4to.]

Since our last notice of this fine work on the Birds of Holland (Ibis, 1919, p. 552) five more parts have appeared, but only the first of these contained any text, and this dealt with the Geese only. The other parts, nos. 6 to 9, include the plates of the remainder of the Ducks and three of the Harriers, with which the second volume will commence.

The series of plates illustrating the Ducks reflects great credit on the artist, Mr. Koekkoek. Not only are both the sexes and the downy young shown, but also in many cases the eclipse and changing plumages as well; in some cases the attitudes are a little stiff and without much variation, but this is perhaps unavoidable when so many are depicted. The last three plates, devoted to the Harriers, are, to our taste, rather spoilt by the great size of the actual birds as drawn, so that the plates appear to be overcrowded, but all the pictures are undoubtedly fine representations of the species.

We shall look forward to seeing the continuation of this great undertaking, and hope that Dr. van Oort's text will soon catch up the plates.

Wetmore's Recent Papers.

[Wild Ducks and Duck Foods of the Bear River Marshes, Utah. By Alexander Wetmore. Bull. no. 936, United States Department of Agriculture. Pp. 1–20. 1921.]

[Five new Species of Birds from Cave Deposits in Porto Rico. By Alexander Wetmore. Proc. Biol. Soc. Washington, vol. 33, 1920, pp. 77–82.]

[Colour of Soft Parts in *Anhinga anhinga*. Id., ibid. pp. 182–3.]

[Further Notes on Birds observed near Williams, Arizona. Id. Condor, xxiii. 1921, pp. 60–64.]

Where the Bear river enters the Great Salt Lake of Utah there is considerable deltaic region of marsh, the favourite resort of innumerable Ducks, both during the breeding-season and subsequently. Mr. Wetmore has spent three summer seasons engaged on field-work with the wild duck in this locality, and the first of this list of papers is his report. The two most abundant breeding species are the Redhead (*Marila americana*) and the Cinnamon Teal, which make up more than half the total number of individuals. Mr. Wetmore estimates that there are at least 1700 breeding pairs of the former species. Many other Ducks come into this region after the nesting-season between July and September to undergo the postnuptial moult, and others again to spend the winter after the commencement of October. Mr. Wetmore finds that the food most attractive to the ducks is sago pond-weed (*Potamogeton pectinatus*) and the bayonet grass (*Scirpus paludosus*), though they also devour large quantities of a brine shrimp (*Artemesia*) and an alkali fly (*Ephydra*).

The second paper on the list contains descriptions of five new forms based on semi-fossil limb-bones of birds found in Cave deposits of Porto Rico, of the genera *Polyborus*, *Gallinago*, *Oreopeleia*, *Tyto*, and *Corvus*.

In the third paper is a careful description of the colour of the soft parts of the American Darter, based on an example killed by the author near Cape Sable in Florida. No one appears to have paid much attention to this matter since the time of Audubon.

The last paper on the list is an additional account of the birds of Williams in northern Arizona, supplementary to one published in 1908 by Mr. Wetmore (Kansas Univ. Sci. Bull. vol. iv. pp. 377–388). The total number of species observed by the writer is 65.

Witherby's Handbook of British Birds.

[A Practical Handbook of British Birds. Edited by H. F. Witherby. Parts ix–xii. London (Witherby), 1920–1.]

Since our last notice (Ibis, 1920, p. 951) the parts of this excellent work on British Birds have been appearing regularly, and the four before us forming the commencement of the second volume contain accounts of the Picarians, Owls, Accipitrines, Herons, and Ducks. The standard set up in the beginning is well maintained, and the information in regard to each species appears to be remarkably complete, especially in regard to the various plumages. We notice that the Red-necked Nightjar, taken near Newcastle in 1856, is now assigned to the desert form, *Caprimulgus ruficollis erlangeri*, and that our Green Woodpecker is no longer confined to our islands but is shared by Germany and France, and must be called *Picus viridis virescens* (Brehm), not *P. v. pluvius*. On the other hand, our Little Owl, though doubtfully a native, has a new name, as it is believed to have been introduced from Holland, not from Germany, where the typical race occurs. Our Dutch subspecies is *Athene noctua mira*.

There are two coloured plates in these four parts—one illustrating the colour and markings of the bills of Swans and Geese, the other the specula of our Ducks. There are also many figures and sketches interspersed in the text illustrating the difference between allied species and other points of interest, all of which are most useful and instructive. There are still six more parts to appear to complete the work.

Wood and Green on Bird Economics.

[Birds one should know—beneficial and mischievous. By the Rev. Canon Theodore Wood. Illustrated by Roland Green, F.Z.S. Pp. xii+132; 8 pls. in colour, 16 in black and white. London (Gay and Hancock), 1921. 8vo.]

This work deals with some thirty-three of the commoner species of British Birds, and contains more or less popular notes on the habits and economic status of each. The

letterpress is quite good, but does not profess to add to our knowledge of these matters. Mr. Green's illustrations, however, bring it more into the category of a gift-book.

The eight plates in colour are very good representations of the birds, and are most artistically drawn and well-reproduced. We specially commend the Goldfinches which form the frontispiece. In addition to the plates, every page contains admirable end- and corner-pieces in black and white showing the characteristic attitudes of the birds and often of their young. The work would be most suitable as a gift-book to boys or girls who are commencing to take an interest in bird-life, and from that point of view we can thoroughly recommend it.

Journ. für Ornithologie.

[Journal für Ornithologie. 69 Jahrgang, 1921. Heft. i.–iv.]

The four numbers of the Journal für Ornithologie make up a stout volume of 580 pages and contain a number of articles of considerable interest, though the bulk of them perhaps deal with German or, at any rate, European birds. The first number opens with the annual report of the Bird-watching Station at Rossitten in East Prussia for 1919 by the Director, Dr. J. Thienemann. During the year bird-marking does not seem to have been very active; only 115 birds were ringed, 39 of which were Black-backed Gulls and 50 Robins. Some 96 marked birds representing 36 species were recaptured, and it is noticeable how often those which were taken at great distances away were reported from Portugal.

African birds are dealt with by Dr. Reichenow, who describes several new races of birds from the interior steppe districts of Cameroon collected by Tessman in 1914, and criticises some of Mr. Claude Grant's revisions and conclusions made in his 'Ibis' paper in 1915. He also discusses the propriety of calling the Steppe Buzzard *Buteo vulpinus*, and is replied to by Dr. Stresemann and Count Zedlitz. From the last named is a long article

(continued from the previous year) on the birds of Pripjet Swamp on the Russian and Polish borders, from which over 240 species have been recorded.

Dr. H. Grote contributes an account of a collection of birds from the Usambara country in Tanganyika Territory made by a missionary, Karl Roehl, in 1904–7, now in the Berlin Museum. About 20 new subspecies were contained in it, but most of these had been previously described by Dr. Reichenow. Another long faunal paper by Mr. L. Schuster deals with the Birds of north-eastern France from observations made by himself and others during the recent war-years. Dr. A. Koenig continues his survey of the Birds of Egypt, in the present instalment dealing with the Laniidæ, Muscicapidæ, and Nectariniidæ.

Of more general articles, Dr. F. von Lucanus contributes a discussion on mimicry in Cuckoo's eggs. He gives a list of thirty hosts, and in a table shows that of 765 Cuckoo's eggs, in 575 instances these very closely resembled those of the host, in 168 they were quite unlike, and in 22 instances fairly like. Out of the 168 unlike clutches, 120 were taken from the nest of *Troglodytes troglodytes*. Mr. W. R. Eckardt writes a good review of the work of American ornithologists on bird-migration in the New World, and Mr. H. Krohn discusses the colour-sense in birds. Mr. H. Poll writes on the sexual proportions among hybrid birds, and this is the only paper illustrated by a coloured plate. Finally, there is a translation of a Russian memoir by Prof. M. Menzbier and W. Schnitnikov, published in 1915, on the species of *Podoces* in Turkestan, and containing a description of *P. panderi ilensis* which will be found mentioned on p. 2035 of the recently published part of Hartert's Vög. pal. Fauna.

Journal of the Museum of Comparative Oology.

[The Journal of the Museum of Comparative Oology, ii. Nos. 1 & 2, 1921. Santa Barbara, California, U.S.A.]

The second volume of the Journal of the Museum of

Comparative Oology commences with a long argument on the rights of egg-collecting. Those who believe in a moral right to kill birds or other living creatures for the advancement of science cannot but accept the subsidiary right to take eggs. The professed purpose of the Museum is the scientific collection of eggs; it will be for the Museum to prove that, through its collections, science has been, or will be, advanced. Theoretically, any centralization of efforts which will do away with the thousand and one aimless attempts of amateur egg-collectors cannot but be an advance on present-day methods, and if, together with the incitement offered to some to collect properly and methodically for the one object in view, discouragement is given to those others, the far greater number, who steal eggs without any such object, much good will be done. It is early days to approve or to condemn, and whilst we sympathize with the idea itself, we must wait in patience to see what the idea will eventually result in. For the present, the Journal shows that much encouragement has been given to the movement, both in America and elsewhere, and we shall look forward to the time when many writers of weight and discretion give their assistance to Mr. L. Dawson in filling the pages of the Journal.

Norsk Ornithologisk Tidsskrift.

[Norsk Ornithologisk Tidsskrift. No. 1, pp. 1–84. Redaktør: H. Tho. L. Schaanning. Stavanger Museum.]

We welcome the first number of a new Ornithological Journal issued by the Norwegian Ornithological Society—Norsk Ornithologisk Forening—which has recently been founded to extend the knowledge of Norwegian birds and to take all possible steps to preserve and protect Norwegian bird-life. The editor, Mr. Schaanning, is the Konservator of the Stavanger Museum, where, though it is not definitely so stated, the journal is printed and published. We have also one other critical remark to make, and that is that the date of publication is nowhere stated. This should

be seen to in future numbers. The journal is very well printed, and got up in rather a large octavo size, about $10\frac{1}{2} \times 8$ inches.

The first article is by the editor, and is a very useful tabular list of Norwegian birds, showing their distribution from south to north and the parallel of their northern extension as well as their occurrence in Spitsbergen or Bear Island. We would direct the attention of the members of the Spitsbergen Expedition to this list. The number recorded in the list is 302, which may be contrasted with 325 in the British List if the "rare visitors" be excluded.

The second article, by Mr. H. Broch, tells us what is being done in the matter of bird-protection in Sweden and Denmark, and this is followed by an account of bird-ringing in Norway and elsewhere by the editor, who has himself ringed some 372 birds in the last seven years. He has also another contribution on migration in Norway, with arrival dates from observations made in various parts of the country. There are other articles of less importance from the pens of H. Fjeldberg, A. Bernhoft-Osa, and B. Hanson, and finally a plea from Dr. Schaanning for the formation of an Ornithological Central Station at the Stavanger Museum, where all records could be kept, codified, and published in due course.

We wish the new venture of our Norwegian fellow-workers all success, and look forward to receiving future numbers of their new journal.

Trans. London Nat. Hist. Soc.

[Transactions of the London Natural History Society for the Year 1920. London, 1921.]

The London Natural History Society is an amalgamation of the City of London Entomological Society founded in 1858 and the North London Natural History Society founded in 1892, and in addition to the main body which meets in the City at Winchester House, there is a branch

at Chingford in Essex; it interests itself in Archæology as well as the various branches of Zoology and Botany, and appears to have a flourishing list of active members. In the present number of the Transactions is a pleasant account of his visits to southern Spain by Mr. H. Kirke Swann, who spent a fortnight in the spring of last year in a village in the mountains west of Ronda, where he was fortunate enough to obtain the eggs of a good many Raptorial Birds, including the Griffon and Egyptian Vultures.

The other ornithological paper is a report on the birds of Epping Forest, drawn up by Mr. S. Austin, and contains a list of 92 species which have been identified within the Forest area. It is a remarkable fact that the Wryneck should be so scarce a bird in Epping as to be almost unknown. The number of nests in the Wanstead Heronry has, we regret to learn, decreased considerably of late years; there were only 58 nests in 1920 as against 72 in 1916.

Trans. Norfolk and Norwich Naturalists' Soc.

[Transactions of the Norfolk and Norwich Naturalists' Society. Presented to Members for 1920–21. Vol. xi. pt. ii. 1921.]

The members of the Norfolk and Norwich Naturalists' Society are certainly to be congratulated on the fare provided for them by Dr. Long, their Hon. Secretary and Editor. The volume just received contains a good many articles of very considerable interest to ornithologists as well as on other subjects. The annual address of the President, Mr. B. B. Riviere, on his retirement, delivered in April last, deals chiefly with the movement of Gulls along the coasts of Norfolk. It is a phenomenon which has been often noticed and commented on but never satisfactorily explained, that every afternoon in late summer and autumn there is a regular passage of Gulls in a north-westerly direction along the coasts of Norfolk from the neighbourhood of Yarmouth to about Blakeney Point. The Gulls are chiefly Great Black-backs and some Herrings. Mr. Riviere

believes that this passage is due to the movement of the Gulls away from the herring-grounds off Yarmouth, after having satisfied their appetites, towards beaches and stretches of sand where they congregate and rest, and that the return movements take place at or before dawn, and are therefore not so often noticed.

Mr. Anthony Buxton contributes a charmingly written article on spring Birds at Geneva in Switzerland, where he is residing, and he has a good deal to say about the arrival, courting, and nesting of a pair of Golden Orioles in his garden. Miss K. M. Watson, D.Sc., has been studying the habits of the Tern colony at Blakeney Point during the summer of 1920, and has added some fresh facts and observations to those of Mr. Rowan, with whom she was formerly associated in this work. She and her friends recorded 412 nests containing 900 eggs. These have all been carefully measured, and the coloration and markings noted in accordance with a fixed scale. Dr. Long, the editor, has an article on bird-protection in Norfolk, and hopes to centralize the activities of various small associations engaged in protecting birds in various parts of the country at Breydon, Blakeney, Wells, and Wolferton. Mr. Gurney recalls the fact that Peter Munday, whose travels in the early part of the 17th century have recently been published by the Hakluyt Society, found Gannets breeding on Gull Rock near Falmouth in 1635 or 1636. Death has been active among the members of the Society of late: in addition to Colonel Feilden and Mr. Upcher, notices of whom have appeared in our pages, Mr. James Reeves, for many years Curator of Norwich Castle Museum, died on 19 December, 1920, at the age of 87. Excellent portraits of all three accompany the notices.

List of other Ornithological Publications received.

Flower, S. S. Report on the Zoological Service [Egypt] for the Year 1920.
Hellmayr, C. E. Review of the Birds collected by D'Orbigny. Pt. ii. (Nov. Zool. xxviii. pp. 230–276.)
Lönnberg, E. Bidrag till kännedomen om ormvråkens näringsvanor. (Sven. Jägareförb. Tidskr. årg. lix.)
Phillips, J. C. A further report on species crosses in birds. (Genetics, vol. vi. pp. 366–383.)
Anzeiger Orn. Ges. in Bayern. (No. 4.)
Auk. (Vol. xxxviii. no. 3.)
Avicultural Magazine. (Vol. xii. nos. 9–11.)
Bird-Lore. (Vol. xxiii. no. 5.)
Bird Notes. (Vol. iv. nos. 8–11.)
British Birds. (Vol. xv. nos. 4–7.)
Canadian Field Naturalist. (Vol. xxxv. no. 4.)
Condor. (Vol. xxiii. no. 5.)
Emu. (Vol. xxi. nos. 1, 2.)
Fauna och Flora. (1921, nos. 4, 5.)
Gerfaut. (Vol. xi. nos. 3, 4.)
Hornero. (Vol. ii. no. 3.)
Irish Naturalist. (Vol. xxx. nos. 9–11.)
Journal Bombay Nat. Hist. Soc. (Vol. xxvii. no. 4.)
Oologists' Record. (Vol. i. no. 3.)
Ornithologische Monatsberichte. (Vol. xxix. nos. 9–12.)
Revue d'Hist. nat. appliquée. (Vol. ii. nos. 8–11.)
Revue Française d'Ornith. (Nos. 150, 151.)
Scottish Naturalist. (Nos. 117, 118.)
South African Journal of Nat. Hist. (Vol. iii. no. 1.)
South Australian Ornithologist. (Vol. vi. no. 3.)
Verhandl. Orn. Ges. in Bayern. (Vol. xv. no. 1.)

XII.—*Letters, Extracts, and Notes.*

Little Ringed Plover in the Balearic Islands.

Sir,—At the Eighth Oological Dinner, September 8, 1921, Mr. Jourdain exhibited a small series of eggs which he said were Kentish Plovers', *Ægialitis alexandrina*, taken in the Balearic Isles in 1919–1920, calling

attention to their similarity to the eggs of the Little Ringed Plover, *Ægialitis dubia* (Bull. B. O. C. xli. 1921, p. 89).

At the time I took very little notice of them, as my opinion was not asked. However, at a subsequent meeting of the B. O. C., Mr. Jourdain again exhibited these eggs, and I was then requested to give an opinion on them, and immediately challenged Mr. Jourdain's identification, and suggested an error in regard to identification on the part of Capt. P. W. Munn, who took them. Members of the Club will doubtless remember that Mr. Jourdain was most emphatic in his remarks supporting Capt. Munn's identification, and adding that the Little Ringed Plover was not breeding in the Balearic Isles, neither had they been seen there. In this he was supported by Mr. Witherby, who added that Mr. Munn had most carefully identified the eggs. I still maintain that the eggs are those of the Little Ringed Plover, and that an error has been made. In support of this, I now find that Mr. Munn *did* find the Little Ringed Plover breeding on the Balearic Isles in 1921 (Ibis, 1921, p. 712).

It is quite possible that the Kentish Plover was brooding on eggs of the Lesser Ringed Plover, hence the error. The love of brooding is well known to many field naturalists, and I have myself known the Kentish Plover to brood the eggs of the Ringed Plover, *Ægialitis hiaticula*, on Dungeness beach. It is also well known that the Bar-tailed Godwit, *Limosa lapponica*, will brood the eggs of the Whimbrel, *Numenius phæopus*.

I have had considerable experience with the eggs of the Kentish Plover, both in England and the Channel Islands, and in my series there is not a single egg which could be mistaken for those of either the Ringed or Lesser Ringed Plovers.

I have never taken the eggs of *Æ. dubia*, but they are well known to me, and I cannot understand any experienced oologist confusing the eggs of the two species. To my mind

they are most distinctive, especially as regards the ground-colour, shape, and size.

P. F. Bunyard.

57 Kidderminster Road,
Croydon.
24 October, 1921.

Bird-Migration and the Marking Method.

Sir,—May I be allowed to reply briefly to Mr. H. W. Robinson's letter in the last number of 'The Ibis,' commenting on my paper on "Bird-Migration and the Marking Method"? Among other things, I must register a modest disavowal of any claim to the title "Professor" which he bestows upon me!

It would be easy to add to Mr. Robinson's list of "omissions" from my paper, but I do not now wish to do more than correct any impression that my account of the Aberdeen University results was intended as a complete summary of the subject in general. My short digression on the history of the marking method indeed admitted that similar work had been taken up "in other parts of the Continent" not mentioned in further detail, and the list of published papers gave merely references relevant to the text and was in no sense an attempt at a bibliography. Similarly, the references to the results of other investigators were obviously and avowedly "by no means exhaustive." In particular, it was not thought desirable to refer in any detail to the results of Mr. H. F. Witherby's 'British Birds' scheme (to which Mr. Robinson's great personal efforts have been an important contribution), because the work is happily still in progress and will doubtless lead to valuable amplifications—and perhaps modifications—of the *interim* results, summarised and otherwise, which have already been published. I should be more than sorry, however, to have conveyed any false impression of stinting admiration for so great an undertaking, of which I indeed said that "the eventual

publication of the collected and analysed results will be an event of great importance to students of migration."

Finally, it may be doubted whether ornithologists are as yet prepared to accept the evidence mentioned by Mr. Robinson, to the extent of regarding it as complete and final proof that for the young to seek exactly the same winter-quarters as their particular parents is a general rule among migratory birds. The existing evidence, however, does at least confirm the point of my original remark, which was to the effect that this sort of question is eminently suitable for investigation by the marking method.

A. Landsborough Thomson.

9 Addison Gardens,
Kensington, W. 14.
17 October, 1921.

A possible Mendelian variation in Nature.

Sir,—Colonel Meinertzhagen's paper on "Subspecies and Evolution" (Ibis, 1921, p. 528) covers a wide field and touches on many unsolved and controversial problems. This note is concerned only with one comparatively small point. In several passages Colonel Meinertzhagen states or implies that variations of the kind studied by the Mendelians are only known to occur under artificial conditions. The exact breeding experiments by which Mendelian theories are tested must of necessity be under artificial control, but at least in the case of plants and insects many of the characters which have proved to be inherited after the Mendelian fashion were first found in nature. As applied to birds, however, Colonel Meinertzhagen's contention is not without some foundation, since domestic poultry are the only birds of which the genetics have been at all adequately investigated. That is why it may be worth while to suggest that the well-known *montana* variety of the Common Partridge is a case of Mendelian variation occurring in nature.

In the adult *montana* Partridge the two prevailing colours have, so to speak, run. The buff-colour has spread over the whole head and neck, the chestnut has spread over the body and wings, and the result is a bird singularly unlike the normal Partridge. This strange variation was first described (as a distinct species) from Lorraine, where it seems to have occurred frequently. But it has occurred also in Spain, in Rumania, in Norfolk, in Northumberland, in the Lowlands of Scotland; probably in many other districts too. In any case it seems plain that it is not a localized freak, but a variation which is liable to crop out in the partridge stock wherever the species is found. That alone would be enough to suggest that the *montana* form, with its remarkable constancy over a wide geographical range, is due to some such definite factor in inheritance as is dealt in by the Mendelians—perhaps to the loss of one of the germinal factors regulating the development of the colour-pattern in the normal bird. But there is also evidence of another kind pointing in the same direction. If, as I am inclined to suggest, the *montana* colour-pattern is "recessive" (in the Mendelian sense) to the normal colour-pattern, we should expect (1) that when it does appear it would only be in, roughly, a quarter of the brood, except (2) when both parents are of the *montana* form, and then the whole brood should be *montana* birds. This expectation does, in fact, seem to be realized as far as the evidence goes. In mid-Northumberland, where *montana* Partridges are of comparatively frequent occurrence, there are usually only about two birds of that form in a covey. Being very conspicuous they are nearly always shot, and with equal regularity regarded as hybrids with the Red Grouse. There is little chance in nature of two adult *montana* birds surviving, pairing, and rearing a brood. Nevertheless this seems to have happened at least twice in Northumberland, for Mr. George Bolam, in his 'Birds of Northumberland and the Eastern Borders,' pp. 473–7, records two cases in which whole coveys were of the *montana* form, and in

one case it was known that both parents were of that form too.

If shooting-men and their keepers could be persuaded to catch and pen these birds instead of shooting them, we should probably be able to settle all question as to their genetic constitution by a few simple breeding experiments.

E. Leonard Gill.

Hancock Museum,
Newcastle-on-Tyne.
20 October, 1921.

Nestling Plumages of Owls.

Sir,—It seems clear from Mr. Bonhote's letter on this subject in the October 'Ibis' (pp. 755–7) that he now agrees with me so far that there is only one generation of down preceding the juvenile feather-plumage in the Eagle-Owl, it being understood, of course, that the various generations of a feather grow from the same papilla.

Having thus cleared the ground, it remains to be decided as to whether there is another down (presumably growing from papillæ different from those of the feathers) as Mr. Bonhote contends, or whether this is (notwithstanding its down-like nature in certain tracts) a part of the juvenile plumage, as I still think after a further examination of the material available. A final decision on this point must, I suggest, be left to that "careful further study" which Mr. Bonhote, quite rightly, says the subject requires.

J. H. Gurney (senr.), whom Mr. Bonhote quotes, obtained his information from Mr. E. Fountaine, and it seems to me probable that he called the downy juvenile-feathers "down," as many people still do. The same suggestion applies to M. Lavauden's remarks and the bird he figures as in "second down," and neither of these observations appears to assist us greatly in determining the point.

In the Hawks it is very clear, as I have already described in 'British Birds' (Dec. 1920, pp. 151–5) and also in the

'Practical Handbook,' that the nestlings have, besides a down directly succeeded by the feathers growing from the same papillæ, two other downs which are not succeeded by feathers. But the Hawks have a thick under-down in the feathered state, while the Owls have not, and in the former these nestling-downs which are not succeeded by feathers may be pre-plumulæ. I have, however, been unable to prove this, as in no case have I found the nestling-down attached to the under-down of the feathered bird.

H. F. Witherby.

Hampstead,
November 1921.

On a blue-grey example of Egretta garzetta.

Sir,—In 'A History of Birds,' p. 299, Mr. Pycraft, writing of the dimorphism shown by the Reef-Herons, says :—"It seems highly probable that we have in these instances an illustration of the lines of evolution which will ultimately end in the suppression of the dark and the survival of the white forms. *The evolution of the White Egrets has probably followed precisely similar lines.*" (Italics mine, A. L. B.)

In support of the latter theory I should like to place on record that in March 1911, on the Dinder River, I met with *a blue-grey example of* Egretta garzetta. Walking alone ahead of my men and camels I came to a pool in the dried-up river-bed which seemed a suitable place for the midday halt. Here I sat down, concealing myself in the bush on the bank, to watch any wild creatures that might visit the pool until the arrival of my transport. Almost immediately two birds alighted on the water within twenty yards of me. One was a normal Lesser White Egret, but the other was of a most beautiful clear blue- or lavender-grey throughout. They remained on the pool for some fifteen minutes, during the whole of which time I was examining and comparing them through field-glasses.

That both birds were of the same species, and that the species was *Egretta garzetta* I have no doubt. In size, form, and actions—in everything but colour of plumage and soft parts—they were identical. The grey bird had a greenish-yellow bill and olive-green legs, in contrast with the black bill and legs of its white companion. I was carrying a Mauser rifle and only some soft-nosed bullet cartridges, and though I could easily have killed the grey bird with this, I hesitated to do so, feeling sure that I should spoil it as a specimen, and expecting my men to come up with my shot-gun at any minute. Unfortunately before their arrival both birds rose together and flew out of sight, the grey bird flying closely behind the white one. Again, on the wing, the similarity of the birds in size, shape, and wing-stroke—in everything but colour—was exact.

I am well acquainted with both the grey and the white forms of *Demiegretta schistacea* (and with two other species of dimorphic Reef-Herons), and I am certain that I did not mistake two birds of this species for *Egretta garzetta*. Moreover, the delicate blue-grey of the coloured bird was quite different from that of *Demiegretta schistacea*, being entirely free from any blackish or slaty tinge.

I quite anticipate that the correctness of my identification will be doubted, being unconfirmed by the securing of the bird, and for this reason I have had considerable hesitation in offering this note to 'The Ibis.' But I shall remain convinced that the bird exemplified a reversion to an ancestral phase in the evolution of *Egretta garzetta* which must be of extremest rarity in this species, in which no tendency to dimorphism has hitherto been recorded.

A. L. Butler.

St. Leonard's Park,
Horsham,
14 November, 1921.

Report of the British Museum.

From the Return of the British Museum for 1920 we cull the following items of interest relating to the Bird-Room.

Valuable assistance in the arrangement of the collection and determination of the accessions has been given by Mr. C. W. Mackworth-Praed and others. Mr. W. L. Sclater has made a revision of the Birds of Prey and prepared a manuscript catalogue of the group. Capt. H. Lynes, C.B., R.N., has worked out the valuable collection made on his expedition to Darfur and presented by him to the Museum. Mr. D. A. Bannerman has continued his work on the Birds of West Africa, and Mr. C. Chubb has worked at the South American Birds and has also continued the list of type-specimens in the collection.

Among more important acquisitions are:—

41 Birds from Mesopotamia and Persia presented by Mr. P. A. Buxton, and 172 birds and 69 eggs from the same region presented by Capt. C. R. S. Pitman.

37 Birds from Ceylon, presented by Mr. W. W. A. Phillips.

608 Birds from Sumatra, presented by Messrs. H. C. Robinson and C. B. Kloss.

A restoration of the White Dodo of Bourbon (*Didus borbonicus*) and a West African Ostrich (*Struthio camelus*) from the Gold Coast, presented by the Trustees of the Rowland Ward bequest.

727 Birds from Darfur and Kordofan, including many types, presented by Capt. H. Lynes, C.B., R.N.

569 Birds from Cameroon, presented by Mr. G. L. Bates.

133 Birds from northern Rhodesia, including one type, presented by Col. Stephenson Clarke, C.B.

608 Birds from Sierra Leone and Nigeria collected by Mr. W. P. Lowe.

270 Birds and 923 eggs from Argentina, presented by Mr. Ernest Gibson.

840 Birds from Peru, presented by the late Lord Brabourne.

Altogether 5540 skins and 1333 eggs have been added to the collection during 1920.

Bird Protection in Norfolk.

From the 'Eastern Daily Press' we learn that the Norfolk and Norwich Naturalists' Society will in future become responsible for the special protection of the Terns and other interesting and rare birds met with in certain parts of Norfolk. This work was formerly carried out by several small local societies dealing with limited areas, such as the districts of Wolferton, Wells and Holkham, Blakeney Point, and Breydon Water. Furthermore, His Majesty the King and His Royal Highness the Prince of Wales have been pleased to become Patron and Vice-Patron respectively of the Norfolk and Norwich Naturalists' Society, and to transfer the subscriptions which they formerly gave to Wolferton Wild Birds' Protection Society to the Norfolk and Norwich Naturalists' Society.

Mr. Bannerman's work on the Canary Islands.

Messrs. Gurney and Jackson have in the press and will shortly publish a book by Mr. David A. Bannerman on "The Canary Islands: their History, Natural History, and Scenery." It will deal very fully with the Ornithology of the Islands and contains accounts of Mr. Bannerman's many visits and camping trips to the various islands of the Archipelago. The book will be fully illustrated by photographs taken by the author, and by maps.

The Everest Expedition.

Mr. Wollaston returned from Tibet with the other members of the Mt. Everest Expedition early in December last, bringing with him considerable collections of zoological and botanical specimens. The bird-skins number 255, representing 55 species; there are no actual novelties, though a Wren of the genus *Troglodytes* appears to be

unlike anything in the British Museum collections; unfortunately only a single skin was obtained, and that one of a young bird, so that it would be hazardous to describe it as new. The highest altitude at which a bird was obtained was 18,500 feet on the eastern slopes of Mt. Everest, where Mr. Wollaston procured an example of the Alpine Accentor, *Laiscopus collaris nipalensis*.

Personal.

Mr. T. Chrostowski, of the Polish Museum of Natural History at Warsaw, writes that he is shortly leaving for South America to renew his investigations into the avifauna of that continent, which were interrupted by the outbreak of the war. He will be glad to correspond with any ornithologists interested in Neotropical Birds and to exchange papers with them. His address is as above.

Notice to Contributors.

At the last meeting of the Committee of the Union the following resolution was proposed by the Chairman and seconded by Major Sladen, and carried unanimously:

> "In consequence of the great expense incurred in the correction of MS. and proof of the papers submitted to the Editor, authors are warned that they may be called upon to pay for any corrections made other than printers' errors."

It has been found that the cost of corrections in proof of 'The Ibis' for 1920 and 1921 was 25 per cent. and 28 per cent. respectively on the total cost of printing the letterpress, and the Committee feel that this is much higher than it should be and that considerable saving could be made if authors were more careful in the preparation of their manuscript or typescript before sending it to the Editor.

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EDITED BY

WILLIAM LUTLEY SCLATER, M.A.

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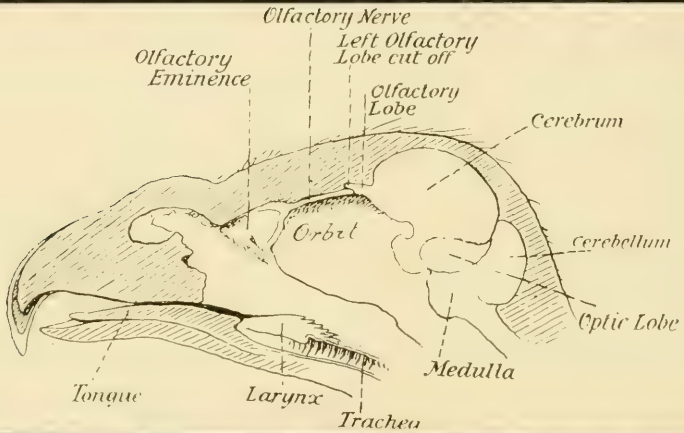

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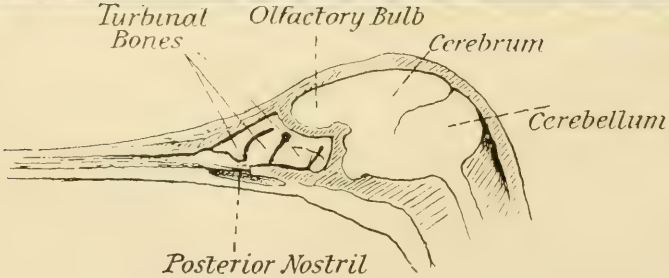

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Olfactory Organ and Brain of
Fig. 1, AQUILA. Fig. 2, APTERYX.

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XIII.—*On the Sense of Smell possessed by Birds.*

By J. H. GURNEY, F.Z.S., M.B.O.U.

(Plate I.)

PART I. Evidence opposed to a sense of smell.
PART II. Evidence in favour of it.
PART III. The writer's conclusions.

PART I.

The Theory of Scent.—There are certain things in the realms of Ornithology which commonly pass as instinct for want of a better name, but which really are a recognisable part of a bird's economy; yet these phases to which I allude are natural enough, being merely due to the normal employment of one or other of the senses—seeing, hearing, tasting, touching, smelling. All are at times rather incomprehensible, but the most perplexing is the capacity for scent,—alleged by some, denied by others. So far, discussion on this vexed question has been rather desultory, with the result that it has always ended in very little. The most experienced enquirers are left in a state of uncertainty as to whether birds find their food and shun their

enemies by power of smell, or by sight, or, as some suppose, by a nameless faculty unknown to human beings. It is curious that so important a matter should be still unsettled, but there are many other problems in Natural History equally obscure which will have to be solved before the economy of animal life is fully understood.

When comparing one branch of the Animal Kingdom with another, it is often the custom (although not always a safe one) to reason by analogy that such and such a property is possessed in degree by all vertebrates or by none. If we argue thus, and compare birds with mammals and other animate creatures which are endowed with scent, it seems reasonable to suppose that they also should be similarly favoured with the possession of an organ of such great utility. Of the existence of a highly-developed scent in the mammals there can be no shadow of doubt; all competent sportsmen and naturalists alike admit its presence in deer and carnivorous animals in the highest degree. That fishes possess the sense of smell has long been suspected, and is now fully acknowledged *. Butterflies and moths, or at all events some of them, are credited with the enjoyment of the faculty of scent, or something which answers to it, of which many instances have already been published. Enough, therefore, has been advanced to show the probability of birds having scent of some kind, but before entering upon the subject, it will be judicious to clear the way by considering the three kindred senses of sight, hearing, and touch, all of which are faculties very liable to be confounded with scent, and which have been repeatedly confused with it.

To begin with sight, it is at once evident that it is impossible to form an adequate conception of the acuteness of vision which birds possess if we merely take our own faculty as a standard of comparison. Most certainly the sense of sight in man is little more than rudimentary when compared with its development in birds. A thousand examples occur to the mind immediately. What shall we say can be more

* See Sheldon on the Dog-fish. 'Journal of Experimental Zoology,' 1911, p. 61.

marvellous than the stoop of a Falcon (*Falco peregrinus*) on its prey, or the sharp vision of the Great Grey Shrike (*Lanius excubitor*), sometimes used in Holland for trapping Falcons, and able to descry them at an incredible distance? But there are many birds besides Shrikes which can detect an enemy soaring so high in the heavens that to the human eye it is invisible, or only just within the extreme range of a telescope. Another factor is that many—possibly most—birds are provided with an extraordinarily delicate sense of hearing, which, although it may not help in finding food, is constantly warning them of danger. Again, the investigator has to be cautious not to confuse the organ of scent with that of touch, by means of which some birds feed—*e. g.*, the Woodcock, most of the surface-feeding Ducks, and (in part) the Apteryx. Thus it will be seen what an involved business it is for an experimenter to formulate any trial which appeals to a bird's sense of smell, and which at the same time excludes sight, hearing, and touch.

If a bird smells food or scents the presence of enemies, it does so by means of the olfactory nerve, for it is by this small and delicate instrument, which passes from the nostrils to the brain where it terminates in a bulb, that impressions of odorous particles are conveyed. Chemical research tells us that the agents which act upon this nerve, and thus give rise to smell, are particles of effluvia, but of the extremest tenuity, which animals can pick up with far greater celerity than man.

Unfortunately my knowledge of anatomy is of the smallest, but Mr. R. H. Burne, who has been good enough to take an interest in the present enquiry, has most kindly obliged me with a photograph (Pl. I. figs. 1, 1 *a*) of a section of an Eagle's (*Aquila*) head, which is preserved in the Museum of the Royal College of Surgeons (Physiol. Series, No. E 119). This is a help, and explanatory as showing in detail the normal structure of the nose, olfactory bulb, and nerve; the left bulb and root of the left nerve are exhibited, and the right nerve with its passage into the olfactory eminence in the nose cavity. With this to aid, the position

of the parts and their purpose is more easily understood than by mere description.

Dissentients from the Scenting Theory.—I am not sanguine enough to suppose that the facts and opinions brought together in this short paper will settle the scent question, but I hope they may advance it a step or two; with this in view it will be convenient to begin by enumerating some of those who have dissented from the scent theory in the past on various grounds, and whose considered opinions are by no means to be at once rejected.

The names of naturalists opposed to the scent theory are as follows:—First stands that of the bird-painter, John James Audubon, who had the support of his friend Bachman, and later (in 1836) the complete concurrence of William Swainson. Between Audubon and a clever but eccentric Englishman, Charles Waterton, a heated controversy on this vexed question presently sprang up, but the arguments advanced with much warmth are not very convincing, and in reading them one is inclined to smile at the jealousy of the disputants and their resort to personalities *.

THE DISSENTIENTS.

In 1829 Audubon was opposed to the scent theory.[1]
„ 1837 Macgillivray (with reservation).[2]
„ 1875 H. E. Dresser do.[3]
„ 1884 Elliott Coues.[4]
„ 1893 Lord Lilford.[5]

1 Jameson's Journal, No. iii., and the 'Ornithological Biography' (ii. p. 33).

2 'History of British Birds' (i. pp. 51, 507).

3 'The Birds of Europe' (iv. p. 573).

4 'North American Birds,' p. 178, and 'Field and General Ornithology,' p. 263.

5 'The Birds of Northamptonshire,' p. 356.

* The major part of this literary duel was carried on in Loudon's 'Magazine of Natural History' for 1833 and 1834. See vol. iii. p. 449; vol. v. p. 233; vol. vi. pp. 83, 163; and vol. vii. pp. 66, 164, 276. An amusing article in Waterton's 'Essays on Natural History' entitled "The Vulture's Nose" will repay reading, as well as two other papers on the same subject.

In 1905 F. R. Herrick.[6]
„ 1905 F. Guillemard.[7]
„ 1907 C. W. Beebe.[8]
„ 1912 Abel Chapman (with reservations).[9]
„ 1912 J. E. Kelso do.[10]

[6] 'Home Life of Wild Birds,' p. 6.
[7] 'Nature,' February 2, 1905.
[8] 'The Bird' and 'Bulletin of the New York Zoological Society,' 1909, part ii. p. 465.
[9] 'The Field,' January 1912.
[10] 'Common and Rare British Birds,' p. 330.

These authors, and it will be recognised that there are some names of good standing, must all be ranged on the opposition side in the question of "Scent" *versus* "No Scent." Indeed, two of them who may well rank as experts, Elliott Coues and Lord Lilford, are in the most distinct opposition to the theory. Lord Lilford, who, when he was alive, was looked upon as a safe exponent of bird-life, expresses himself very strongly as a disbeliever in the employment of scent by the majority of birds, and adduces his experience as a gunner of many years.

The views of modern Ornithologists, and the futility of their experiments up to the present.—It will be seen, therefore, that in the past the non-scent advocates have been in the majority. At the same time, it is quite plain that it is not with the disbelievers that the *onus probandi* rests, but with the upholders of the scenting theory. First of all, let us test the matter by the opinion of some of those more recent writers who have approached the question without the bias which marked the Audubon-Waterton wrangle, and whose views are more likely to be sound. First, Mr. Abel Chapman, a competent ornithologist, who follows in the line of Lord Lilford—that is to say he is opposed to the idea of birds, with the exception of the *Anseres*, being able to scent either food or foe to any considerable extent *.

On the question of Ducks (*Anseres*) there is a good deal to be said, and this part of the subject will be returned to

* "The Sense of Smell in Birds" (Field, Dec. 30, 1911, and Jan. 6, 1912). In preparing these articles Mr. Chapman acknowledges the assistance of Mr. J. E. Harting.

later, but there is no need to withhold the experience of one of the best-versed Norfolk wildfowlers, James Vincent. Mr. Vincent has long since satisfied himself that on the large Broads, diving ducks, such as the Tufted Duck (*Fuligula cristata*) and Pochard (*F. ferina*), are easily approached down wind with a man's scent blowing to them, and Coots also, but he is careful to add that this does not apply to Mallard and Teal.

Mr. Chapman goes on to say something about African Guineafowl (*Numida*), adding as the result of his experience in lying up for these birds as well as for Sand-Grouse (*Pterocles*) and Francolin, which he had often done, that none of them ever gave the least indication of detecting the human presence by their nostrils. It is true this is but negative evidence, but it is confirmed by Stevenson-Hamilton *, another African sportsman, and coming from two practical men it can hardly be set aside. Mr. Chapman does not allow the olfactory organ to be a safeguard to any Game-birds, but here he is in direct opposition to Xavier Raspail, whose evidence will come later (1) †. The circumstances under which their observations were made may account for a good deal of difference. As regards other groups of birds, the evidence is in many cases conflicting; but certainly there are some species which, so far as can be judged, exhibit no powers of scent at all.

With the great family of waders—Curlew, Godwits, Dotterel, Knots, Plover, &c.—it is difficult to say whether they do or do not scent the presence of danger, for most of these birds are so much on the alert at all times, and have marvellous sight and hearing. Mr. Chapman makes a curious remark about the Curlew (*Numenius arquata*), viz., that while on the inland moors of Northumberland, its scenting capacity is, or seems to be, negligible, on the coast it quickly becomes keenly sensitive. In this connection, the views of Dr. F. G. Penrose ‡ and Mr. J. E.

* 'Animal Life in Africa,' p. 290.

† See bibliography at the end of the paper.

‡ 'British Birds,' vi. p. 266.

Kelso * as to the behaviour of Stone-Curlew, and of Mr. Leslie Smith on the Ringed Plover †, are all certainly worth consulting, though too long to quote, but they have more than an indirect bearing on the scent question.

All the numerous small birds (*Insessores*) may have need of scent at times, and possibly they enjoy and employ it. Raspail thought that it was present in *Turdus* (1), and at least one writer credits the Cuckoo with it, but the Cuckoo is a bird of mystery about which anything may be suspected! As for Jays, Shrikes, Nightjars, &c., for the present it is safest to say that we know nothing about their olfactory resources, if they have any. Titmice (*Parus major*, *P. cæruleus*) may possess scent: Raspail thought they had it (1), and certainly their visits to dairies which a hundred and thirty years ago won them the name of "Pickcheese" in Norfolk, looks very much like it.

Tests applied to Turkeys and Doves.—Some, perhaps, may think that the scent question might be settled by artificial experiment, but this is very difficult. As a matter of fact, not a few tests have been applied from time to time, but none of these so-called trials have been very successful. A few years ago the domestic Turkey (*Meleagris*) was laid under contribution. Owen had shown that, like other birds, it possessed the usual olfactory nerves ‡, and Dr. Alexander Hill deemed it a convenient medium for experimenting on. Shortly the details of the tests applied by that gentleman, which he communicated to 'Nature,' were as follows §:— Dr. Hill placed various strong-smelling substances, such as asafœtida, essence of anise, and oil of lavender, in the turkeys' food in one place, and nothing at all in another, in the expectation that the turkeys would hardly show themselves insensible to such powerful odours: but either the turkeys were too greedy or very indiscriminating, for they evinced neither preference for, nor repugnance to, their

* 'Common and Rare British Birds,' p. 330.

† 'British Birds,' xv. p. 26.

‡ P. Z. S. 1837, p. 34.

§ 'Nature,' Feb. 2, 1905.

meals. Even when prussic acid was tried, they remained quite indifferent, although it caused them to stagger under its strong fumes, so the experiments had to be abandoned as a failure.

Next a skilled anatomist of the United States, Dr. R. M. Strong, carried out an elaborate series of experiments on tame doves, the results of which, disappointing as they were, he has detailed in the 'Journal of Morphology.' The doves were placed in tight compartments, previously specially prepared either to admit or to exclude scent, when it was hoped there would be some demonstration on their part to indicate an association of odour with the location of food, but instead of that they unfortunately remained stolidly indifferent (2).

Others have supposed that experiments might be made with blind birds, and it is not unlikely that the faculty of scent comes to their aid when food is required, but I am convinced that any such trials made in aviaries are too fallacious to be of use. What is more to the point is that wild birds in which blindness was supposed to have been congenital have been occasionally shot. It is true there are not many such records, but an instance of a blind Shoveler Duck (*Spatula clypeata*) is given by Mr. Harting. "The eyes," he says, "were hard and opaque, reminding me of the appearance of a horse that is wall-eyed" *, yet the bird was in good condition. Another case was that of a blind Shag (*Phalacrocorax graculus*) in Orkney, which had a dark film covering both eyes, and the pupils were scarcely discernible, yet it was quite fat when captured. A third was a Weaver Bird (*Ploceus baya*) which had cataract in both eyes †, and a South African Barbet which, though blind, was still able to maintain itself.

* 'The Field,' Sept. 30, 1871.

† 'The Field,' Oct. 7 and 14, 1871. But a blind Rook was seen to be fed by other Rooks (t. c., May 20, 1905), and assistance of this kind may be sometimes forthcoming.

PART II.

Indications that birds are capable of scenting food.

Having now quoted several adverse opinions about scent, and most of what there is to be said against the scent theory having been brought forward, it remains to cite several facts which tell in its favour. With this in view it is proposed to put into the witness box the Black Vulture (*Cathartes*), of which there is a great deal to say, and eight or nine other species, namely, the Raven, the Rook, the Hooded Crow, the Woodpecker, the Sandpiper, the Great Shearwater, the family of Petrels, and the Apteryx.

1. The Raven.—We first meet with the notion that birds have any powers of smell in a very old belief about the Raven (*Corvus corax*). For centuries there has been a persistent idea that Ravens were gifted with the faculty of discovering the approach of death in a house where there was malignant disease, and presumably this could only be accomplished by their possessing acute scent perception, unless indeed they have some occult food-finding faculty, which has been also suspected in Vultures. Belief in the strange powers of the Raven was far from being confined to England; no great research is needed for tracing it in many other countries besides our own. In the seventeenth and eighteenth centuries, that the Raven "smells death" was a matter of common credence in Scotland, in the Shetlands, in the Isle of Man, in Ireland, in Wales, and in parts of Germany, but it did not extend much farther south than that, and seems to have had little or no currency in France and Italy. It was the popular idea in northern rather than in southern countries,—that is what the well-known lines which Shakespeare has put into the mouth of the jealous Othello in one of his most famous plays, represent:

> "As doth the Raven, o'er the infected house
> Boding to all . . . . . ."

Othello, Act iv. scene 1.

That the belief expressed by the Elizabethan poets and upheld by later writers of repute, German as well as English,

in the almost supernatural powers of Ravens was something more than idle folk-lore is certain, although at the present time it may not be easy to support that faith by anything very tangible. Nevertheless there are a few anecdotes confirmatory of the Raven's power which seem to be authentic enough, of which the following is one :—

In May 1871, Mr. E. Baker of Merse in Wiltshire was attending the funeral of two children who had died from diphtheria. The road to be followed lay along the Downs for a mile or more and the hearse had not proceeded far when two Ravens made their appearance. These sable birds, which seventy years ago were not uncommon in Wiltshire, accompanied the mourners most of the way, and attracted attention by making repeated stoops at the coffins, leaving no doubt in Mr. Baker's mind that their power of scent had detected what was inside them *. After reading this narrative it is difficult to treat the long-established belief about Ravens as a fable ; here it is quite certain that sight could have been of no avail as the coffins were closed, and the Ravens could only have realised what their contents were by scent.

Other witnesses to their power of scent might be called, but they are not all satisfactory, so I will limit myself to four.

William Hogg of Peebleshire, sheepmaster, was a great friend of Macgillivray's, and a very observant naturalist. He tells us how, in his part of Scotland, in the early part of the nineteenth century, a sheep on the hills could not be dead many minutes before the Ravens would find it †. Nowadays there are so few Ravens left that a sheep's carcass might lie unheeded, but a hundred years ago it was different, when these fine birds had not been systematically poisoned throughout the countryside.

" It is a common belief," says Mrs. Saxby, writing of the folk-lore of the Shetlanders whom from long residence she

* This singular story is told by the Rev. A. P. Morres in the ' Wiltshire Archæological Magazine ' for 1873 (vol. xviii. p. 299).

† ' History of British Birds,' by W. Macgillivray, i. p. 510, and ' Zoologist,' 1843, p. 216.

knew so well, "that Ravens are attracted to a house where a corpse is lying . . . . . led by some subtle sense beyond the senses of mere man to comprehend" *.

Charles St. John, another good Scotch naturalist, who lived farther north than shepherd Hogg, too careful to commit himself on the question of scent, is content with the remark that "the instinct of the Raven in discovering dead bodies of large animals is wonderful and very difficult to understand" †, but he evidently does not altogether discard the olfactory theory.

Robert Dunn considered that the Raven's acuteness must be due to scent. "It possesses the sense of smell in an exquisite degree of perfection" ‡ is his verdict, and that is what most Shetlanders seem to have thought about the Raven.

But although the Raven is so clever in discerning the whereabouts of food, observers are agreed that it displays no particular skill in the discovery of danger, if that danger be not visible and of this the present writer has had personal experience more than once. Dr. R. M. Strong, of Chicago, who has taken up the scent question from an anatomical point of view, and worked it more effectually than anyone, finds the olfactory lobes and nerves in all the Crow tribe to be surprisingly minute, which is curious. Dr. Strong's figure of the Raven's lobe exhibits this deficiency, and the same conditions prevailed in all the *Corvidæ* material at his disposal (2).

2. Rook.—In testing the use and operation of scent, a good example to take is the Rook (*Corvus frugilegus*), and observe how one of these sagacious birds goes to work when he is hungry. The Rook does not forget that he is endowed with sharp sight, but nature teaches him to make use of his nostrils also to indicate where a meal lies, nor does it signify to him that those nostrils are often covered with bristles.

* 'Birds of Omen in Shetland,' p. 10.

† 'Natural History and Sport in Moray,' p. 47.

‡ 'Ornithologists' Guide to Orkney and Shetland,' 1837, p. 81.

He has a power which enables him to smell through all bristles, thick or thin, and quickly to detect the fat grubs of the Cockchafer and the Click-beetle lying buried beneath the ground, especially if it be the loosened soil of a newly-turned furrow. This faculty the Rook must exercise by the help of his nose, and what proves it to be so is that he does not make his hole by chance, but in the right place where the morsel lies.

In 1916 I had evidence of this, for having sown one portion of a field with potatoes in response to the national appeal to farmers to grow this crop, I was very soon struck with the propensity of Rooks to visit that part of my farm and eat them. It is true they were pretty safe for the first four weeks, but when May came, and the "settings" began to shoot a little, the Rooks found them out. Rooks can be very troublesome also on the newly-sown barley in spring, when rows of holes made by their strong beaks are sometimes to be seen, but always be it noted, in the place where the grain lies *. Nevertheless the instinct of the Rook may be sometimes at fault, as the following anecdote seems to show.

On June 20th, 1920, the farm labourers at Keswick were set to "single" swede-turnips, which were already about four inches high. They left off chopping them out at noon for dinner, and to go into a hay field on another part of the farm, returning to the roots about 6 A.M. on the following morning. In the meanwhile a very large flock of Rooks had settled on the field, and observing the freshly-hoed plants, perhaps concluded from their drooping appearance that they were attacked by the larvæ of *Agriotes lineatus*, i. e. "wireworms." At all events, they completely destroyed two acres of the crop of swedes by pulling up the young plants and leaving them to die—in fact, doing me over twenty pounds worth of damage in less than eight hours. If, then, my interpretation of this performance be the right one, it is not a proof of scent, but quite the reverse on the part of Rooks.

* They may, however, be baulked by cross-harrowing, which makes the grain lie deeper.

3. Hooded Crow (*Corvus cornix*).—This Crow is common enough near the coast, always looking for garbage or what he can find. After a day's covert shooting especially he is sure to be on the alert. Again and again will this crafty bird make a meal on some hare or wounded pheasant, which the gamekeeper and his beaters could not discover. However thick, writes a well-known shooter on the Norfolk Broads (James Vincent), the sedge or reeds into which ducks or coots fall, the Hooded Crow will find them, when a retriever is unable to scent anything whatever.

4. Woodpecker.—The Greater Spotted Woodpecker (*Dryobates major*) is very fond of the caterpillars of the Wood Leopard Moth (*Zeuzera æsculi*), which bore tunnels into oak, ash, beech, lime and chestnut. The Woodpecker is therefore doing good by destroying them, but in what way does it discover the larvæ if not by scent?

The same inference must be drawn from the behaviour of American Woodpeckers, some of which, says a naturalist in that country (Mr. Beal), locate their hidden prey, larvæ and grubs, "with great accuracy and often cut small holes directly to the burrows of the grubs" (3). This certainty of discovery would be strange if it were not explainable by scent, which seems to be the right solution, though possibly the borings of the larvæ are at times audible.

"I have seen," says Mr. F. M. Chapman, "an opening made by a Pileated Woodpecker (*Phlæotomus pileatus*) in a white pine-tree, twelve inches long, four inches wide and eight inches deep, through perfectly sound wood, to reach the larvæ at work in the heart of the tree"*. A food-finding faculty of some kind must exist in these Woodpeckers, perhaps scent, possibly hearing, but in any case not sight.

5. Sandpiper.—It is a common practice in Norfolk to "fye out" a drain, that is, to cleanse a "dyke" or pasture water-course, and a very smelly operation it sometimes is. Again and again have I remarked how the attraction of the mud is sure to bring sooner or later the Green Sandpiper

* 'Colour key to North American Birds,' p. 148.

(*Tringa ochropus*), by no means an abundant bird at any time, and occasionally *T. glareola* or *T. hypoleuca*. But how do they manage to discover the freshly-turned mire which is to provide them with a meal unless they smell it, and if they smell it, it must often be from a great distance, yet of course there is the possibility that they may see it when on the wing at night. But although Green Sandpipers may find a muddy pond by smell, when they have got there they seem to probe for their food by touch.

6. Shearwater and Petrel.—No more convincing proof has been published of there being certain sea-birds which scent their food than the testimony borne by Captain J. W. Collins in his narrative of the methods employed by the New England fishermen in catching Petrels for bait off Newfoundland and Nova Scotia.

Collins confidently affirms that the Great Shearwater (*Puffinus gravis*), Leach's Petrel (*Oceanodroma leucorrhoa*), and Wilson's Petrel (*Oceanites oceanicus*) are all able to discover—apparently by smell—liver at a distance, and, moreover, they can do it in a thick mist when sight would not avail them. "On many occasions during the prevalence of a dense fog, when not a bird of any kind has been seen for hours," he writes, "I have thrown out as an experiment pieces of liver to ascertain if any birds could be attracted to the side of the vessel. As the particles of liver floated away, going slowly astern of the schooner, only a short time would pass before either a Mother-Carey Chicken or a Hag*, generally the former, could be seen coming up from the leeward out of the fog, flying backward and forward across the vessel's wake, seemingly working up the scent until the floating pieces of liver were reached" (4).

7. Storm Petrel.—On 10 October, 1867, a skate's liver was floating near the pier at Brighton, which attracted several Storm Petrels (*Thalassidroma pelagica*) †, but what brought them, if not the odour of the liver, for they are not common birds in that part of the Channel?

* Hag or "Hagdon," the Greater Shearwater (*Puffinus gravis*).

† 'Land and Water,' 19 Oct., 1867.

It would seem from other suggestive, if not conclusive, observations, that the attribute of scent belongs to the northern Fulmar, the Blue Prions of the south, and possibly to most species having tubular nostrils, though whether those nostrils are an aid or not is uncertain, for their real use has never been demonstrated. Dr. C. B. Ticehurst considers that he has proved scent in *T. pelagica* *, of which the preceding anecdote is confirmatory.

8. Fulmar Petrel (*Fulmarus glacialis*).—The Fulmar has long been credited with powers of smell, but there is no absolute proof of it, although the general sentiment among seamen is that it works by scent. Dr. Strong, in his anatomical article before referred to (2), descants at some length upon the large olfactory lobes of the Fulmar, which had been previously described by Klinckowström (5), remarking that its organs of smell were among the most interesting of any species examined, the inference being that scent in the Petrel is well developed.

9. Gannet.—There is one bird about which we should have liked more information from so competent an authority as Dr. Strong, and that is the Gannet (*Sula bassana*); in this species Dr. Strong finds the olfactory lobe to have a peculiar ventral position, but he does not hazard any opinion as to what this may indicate (2). Gannets and Cormorants have no external nostrils, which is against their possessing olfactory powers, nor does one see what good they would be to them.

10. Albatros.—In 1908, Mr. Burne exhibited a preparation of the head of an Albatros (*Diomedea exulans*) before the Zoological Society, for the purpose of showing the relatively enormous development of the olfactory organ in this species, in which the bulbs were found to measure 7 mm. in diameter, and to receive large nerves from the nasal septum and lateral wall of the olfactory chamber (see P. Z. S. 1908, p. 66). In Mr. Burne's opinion this must mean that the Albatros is the possessor of great powers of

* 'Avicultural Magazine,' 1911–12, p. 113.

scent, but this is not confirmed by the observations of seafaring men, see some remarks by Captain F. W. Hutton (Ibis, 1865, p. 292).

11. Vulture.—So far back as the days of Ray and Willughby, it was the universal opinion of educated men that Vultures were to be credited with great powers of scent. The first man to cast doubt on this common report, and to investigate for himself, was the American naturalist Audubon, who entirely discredited any olfactory power whatever being granted to the Vultures of North America; so did all the leading naturalists of Europe, but not Charles Darwin, who, however, admitted that the obtainable evidence for and against was singularly balanced *. The tests used by Audubon, which were thought so much of at the time that they were held by Percival Hunter to be unanswerable †, are described at length in 'Jameson's Edinburgh New Philosophical Journal' (October and December 1826, No. 3); Loudon's 'Magazine of Natural History' (1834); and in the 'Biography of the Birds of America.' They are not what would be thought very convincing now, in spite of the high opinion entertained of them by eminent men of that day, and before long they became the object of scathing criticism from a clever writer and controversialist, Charles Waterton, who maintained, as a result of personal acquaintance with Vultures in Guiana, that the Black Vulture (*Cathartes atrata*) was directed to its food by scent ‡. Strange to say, the Vulture question still remains almost as much a puzzle as it was a hundred years ago, and the Audubon-Waterton "duel" is not fought out yet!

There are not a few who still continue to look upon scent in Vultures as an untenable theory; apparently that view was held not so very long ago at the Natural History Museum—in fact, as recently as 1910, so careful a naturalist as Mr. W. P. Pycraft sided with the non-scent party. With so much divergence of opinion, all we can do is to

* 'A Naturalist's Voyage,' p. 184.

† 'Magazine of Natural History,' 1833, p. 84.

‡ *Ibid.*, 1832, p. 240.

formulate the evidence and leave future enquirers to pass judgment.

The most important pro-scent witness to be called is a medical man in Jamaica, apparently very trustworthy, Mr. W. Sells, by whom the following communication was made to the Zoological Society *.

After premising that on one occasion he had to make a post-mortem on a body, and whilst so engaged the roof of the house was studded with Vultures (*Cathartes aura* † and *C. atrata*), he goes on to tell the following:—"Another instance was that of an old patient and much valued friend who died at midnight. The family had to send for necessaries for the funeral to Spanish Town, distant thirty miles, so that interment could not take place until noon of the second day, or thirty-six hours after his decease, long before which time—and a most painful sight it was—the ridge of the shingled roof of his house, a large mansion of but one floor, had a number of these melancholy-looking heralds of death perched thereon, besides many more which had settled in trees in its immediate vicinity. In these cases the birds must have been directed by smell alone, as sight was totally out of the question."

Mr. S. R. H. Rhoads, another reliable observer, relates an incident which, though not quite similar to the above, leads to exactly the same inference ‡. A horse and cow had been buried in a certain place, where they lay some years, but on the top soil being removed for potatoes, although the carcases were invisible and the arising odour imperceptible to human nostrils, Vultures were soon attracted to the spot. Several other cases might be cited, but the above seem to be the most trustworthy.

Now to turn from America to the Vultures of South Africa (*Gyps kolbii*, *G. rueppelli*, *G. auricularis*, *Neophron percnopterus*), for a great deal has been said and written

* See P.Z.S. 1837, pt. v. p. 33.

† Called "Turkey-Buzzard," and the Black Vulture sometimes nicknamed a Carrion Crow.

‡ 'The American Naturalist,' xvii. 1883, p. 829.

about them and their capacity, but if we may trust the evidence before us, they are altogether different from the American Vultures, the sense of scent being non-existent.

In his entertaining 'Animal Life in Africa,' Major Stevenson-Hamilton says :—"After two occasions on which I had happened to shoot crocodiles basking on sand-banks, stone dead with the first shot, so that they lay in perfect natural positions, I took the trouble to visit the carcases every day in order to see what the Vultures did. On one occasion it was a week, and on the other five days, before the birds came near, though as many minutes would barely have elapsed in the case of a mammal lying obviously dead in the bush ere they put in an appearance" (p. 289).

Similar trials had been made by Dr. F. Guillemard, who tells us that when a Wildebeest (*Connochætes*) was shot, disembowelled and hid in the hole of an Ant-bear, the Vultures could not find it, although a circle of them might be seen standing round the spot where the offal had been thrown *.

The same view of the matter is taken by other African writers, *e. g.* by Sir John Kirk (Ibis, 1864, p. 314) and Mr. W. L. Sclater (Birds of South Africa, iii. p. 386).

But it is not only in Africa that the sight theory is predominant. It is adopted in preference to that of scent by naturalists in Asia, although it is true that in India writers are not unanimous about it. India is a country of Vultures, and Indian sportsmen when they shoot a deer consider it safe if covered up, but if it is exposed it will probably be eaten by Vultures. T. C. Jerdon, however, more cautious than some, thought that Vultures must have "a strong sense of smell," although in another place he says it has been exaggerated, and in any case he realises their acuteness of eyesight. He is here alluding to *Gyps fulvus*, *G. himalayensis*, *G. indicus*, and *G. tenuirostris* †.

After all, it may be that the explanation of the uncertainty of behaviour on the part of the Vultures, and the different

* 'Nature,' Feb. 2, 1905.

† 'Birds of India' (Austen's edn.), i. p. 5, Introd. xvii.

inferences which have been drawn from it, are not so obscure as at first appears. Possibly Vultures pick up effluvium arising from putrid matter at a distance, but not so well when it is near them; while another suggestion is that their olfactory organs are more susceptible to decay in its first stage of decomposition than later—instead of the reverse, as might be expected.

That Vultures are exclusively guided by their marvellous powers of sight, when soaring at a vast height in the heavens they discern some carcase on the ground, is admitted, and it is easy to understand how a sort of aerial telegraphy may bring them in numbers to the feast, but this is no disproof of the employment of scent at other times and under different circumstances.

12. Apteryx.—After perusing the foregoing accounts, it seems impossible to deny that there are some birds, at any rate, in which the sphere of perception of odours must be much more extended than it is in man; but let us turn to a very specialised New Zealand form—a bird which has already been under discussion more than once in connection with the scent question.

That the Apteryx possesses a complicated nasal apparatus has long been known. The prominences named the turbinal bones are described by anatomists as large, while the nostrils, instead of being at the base of the beak as in most birds, are placed at its extreme tip and on the under surface. From these facts, and from the length of the olfactory sacs, which extend far back, and from the sniffling sound which the bird commonly makes when searching for food, the Apteryx has been regarded by several modern authorities as possessing great scenting capacity. At the same time, that it is so is not altogether clear, because whatever its olfactory powers may be, it has unquestionably in addition an exceedingly delicate sense of touch, and we can understand how needful both these qualities must be, especially the latter, for the sight of an Apteryx is of the poorest and would be but little help in finding food.

I am greatly indebted to Mr. R. H. Burne, of the Royal

College of Surgeons, for the accompanying photograph (Pl. I. figs. 2, 2 *a*) of the section through the head of an Apteryx, taken from a preparation preserved in the College (No. E 112 Physiol. Series, Royal College of Surgeons Museum). This will explain the several parts better than a description. In it the position of the olfactory bulb is shown, as well as the turbinal bones in the nose-cavity covered by the olfactory membrane. Considerable evidence of the alleged powers of the Apteryx has been at different times advanced, all of which need not be quoted ; indeed, some of it is not satisfactory * and is hardly worth reproducing.

An experiment tried in London by Dr. Strong and Mr. R. I. Pocock with *Apteryx mantelli* at the Zoological Gardens, was not conclusive (2), nor was one which was detailed some years ago in 'The Field' very satisfactory, but, on the whole, there is a consensus of opinion that the Apteryx makes great use of the nasal apparatus with which nature has provided it.

The supposed ability of Pheasants and Wild Ducks to scent water.—By no field-naturalist has the debated question of scent been more studied than by Xavier Raspail, who argues that if birds can scent seed and grain, there is no particular reason why they should not smell water (1). In the case of a certain Pheasant's nest on his property in France, where he had carefully watched the hen, he writes :— "Il est incontestable que cette Faisane, de même que tous les Faisans mâles où femelles que j'ai vus trouver l'eau quel que soit l'endroit caché ou je l'avais placée, en avait perçu les émanations à une distance qui ne pouvait être moindre de 180 mètres (about 225 yards)" from the spot where "son nid aurait été établi sur la lisière même du bois." This, then, seems to be pretty clear.

We see the same instinctive knowledge of the whereabouts

* See 'The Field,' 1874, p. 277. Sir Walter Buller has a good deal to say on the subject (Birds of New Zealand, 2nd ed., vol. ii. p. 313), and he returns to it in his Supplement when treating of *A. lawreyi*.

of water in pinioned wild-fowl. When they escape from my small pond, they at once make for the river, distant three-quarters of a mile, although it is certain that they can neither see nor hear it from where they are; accordingly it must be by scent, or else by some unknown faculty that they are guided. The latter solution is possibly the more probable of the two.

That some Birds undoubtedly smell the presence of Enemies.—Having now done with the food part of the enquiry, there is another aspect in which to consider the employment of scent by birds,—and that is, can they or can they not smell the presence of an enemy? We know very well that four-legged animals are quick enough in detecting a hunter's presence by the odour which he gives out, and what they can accomplish, birds may be expected to do also.

The experiments undertaken by Dr. Penrose, Mr. Kelso, and Mr. Leslie Smith * it is true, do not altogether bear this theory out, but there may have been something exceptional. Xavier Raspail holds strongly that birds can and do smell the presence of human beings and probably of other enemies. In his judgment Pheasants and Partridges in France give quite as ample proof of a distrust of hidden danger as do hares, rabbits, and roedeer (1).

That M. Raspail's observations are correct few will doubt, but in England game is kept in such an artificial condition that it is not easy to form any conclusion about Pheasants. Partridges, however, seem capable of scenting danger, and several times I have thought to detect their smelling a man's presence when they did not see him, and the same also with Wood-pigeons.

Acute powers of scent have always been attributed to Wild Ducks by decoymen, both Dutch and English. I used to hear this insisted upon by old Page at Fritton Lake, and in fact all decoymen are agreed about it. It was commonly held that a perfect decoy should be provided with three "pipes," so that from whatever quarter the wind blew

* *Antea*, p. 230.

the decoyman should have his chance, and to make doubly sure he took a piece of smouldering peat in his hand, without which the fowl might smell him and rise in a moment.

"Such is the acute sense of smelling," writes a well-known sportsman of the old school, William Daniel (1812), "which wild-fowl possess that should the (decoy-) pond be full of fowl, if they scented a man, not a bird would remain in it a moment" *.

The Rev. R. Lubbock, whose description of the Norfolk decoys has become a classic, goes on to aver the sense of smelling to be also very acute in the Heron (*Ardea cinerea*) (7), and this I am ready to confirm, having on different occasions observed a Heron rise from a position where it could not have seen my approach, although it is just possible that it heard me.

The evidence concerning Wild Geese (*Anser brachyrhynchus*, *A. ferus*, *A. albifrons*) is mixed. Reports from the Hebrides and the Wells marshes in Norfolk indicate that they can be very sensitive to the human presence at times, but that they are not always so. What the agency is that regulates their apprehensions is not clear, but they do not behave like Wild Ducks.

Lord William Percy mentions his giving his wind at a distance of about seventy yards to three White-fronted Geese, which were asleep in a bog. All three immediately lifted up their heads and walked about uneasily, looking in the direction whence the scent came, evidently alarmed by something †, which he naturally concluded to be a proof of their having scented him.

On the other hand, Mr. F. M. Ogilvie is more ready to attribute the alertness of Wild Geese to sight, remarking that they seem to "discern any strange object which may be a source of danger, at what seems to us quite impossible distances" (6).

That Birds smell Eggs tainted by Human contact.—Again,

* 'Rural Sports,' iii. p. 268.

† 'The Field,' vol. cxix. p. 48.

how easily birds forsake their nests and eggs when too much inspected, the reason being, I take it, not so much that the fabric of the nest has been disturbed as that the eggs and nest have become tainted by contact with the human hand; this, at all events, seems to be the solution of their behaviour in a great many cases. One of the most suspicious birds appears by report to be the Great Bustard (*Otis tarda*). We know but little of its habits in England, but Lafourcade, whose account of the Bustard is very complete, describing them in the south of France, tells his readers that if a Bustard's eggs are handled, or even touched, they are nearly certain to be forsaken (8).

The same jealousy is attributed to them by Daniel*, and by another French sportsman M. Descourtils. "If in the absence of the female," observes the latter writer, "un touche a ses œufs, elle les abandonne, quelque avancée que soit l'incubation" (10). In these cases it can be nothing but the operation of scent which provokes the parent Bustard to forsake her treasures so easily.

PART III.

Conclusions on the Scent question very difficult to arrive at.—Here, then, the much-disputed problem of scent *v.* no scent comes to an end, and it must be confessed the matter does not terminate satisfactorily, for it leaves us with a web still unravelled, and but little that can be said to be certain one way or the other on the scent question. That a large portion of the feathered kingdom possesses some power of smelling food and also the presence of dangerous enemies seems pretty clear—he would be a bold man who denied that much—and further, that it is a power which occasionally seems to be accentuated to a marvellous degree.

But granted that birds can smell, we may safely conjecture that all species are not equally endowed with the faculty—*e.g.*, it is most unlikely that an Owl uses or requires the olfactory nerve like a Petrel, or an Ostrich in the same

* 'Rural Sports,' vol. iii. p. 28.

ratio as a Raven. To some species smell would be an invaluable property, to others of no consequence, and most likely they do not have it, for nature does not grant her gifts where they can be of no use.

But what can it be that regulates the mystery. Does the answer lie in any particular area inhabited, in the season of the year, in the state of the atmosphere, in the physical condition of the bird itself, or in the nature of the food on which it is dependent? Here we are at a loss, and conjecture is of little avail.

The Theory of a Food-finding Sense.—There is another matter without some reference to which this article would be very incomplete. What I allude to is a novel theory which has been propounded more than once, and which is gaining ground, I believe—viz., that there exists in birds an occult power which may be denominated a food-finding sense, separate from and additional to the five senses commonly recognised. The principal exponent of this bold theory is a naturalist of the United States, Mr. H. H. Beck, and it must be admitted that he has made out a plausible case for what on the face of it seems a not improbable solution of many difficulties (9).

If the principle of this theory be accepted, the necessity for any employment either of scent or sight is almost done away with; the Raven is free to find its carcase, the Rook its potatoes, the Woodpecker its caterpillars, without any olfactory help at all. At the same time, if there be such a thing as a food-finding sense of this kind, it is undoubtedly safer to regard it as an adjunct to the known senses of seeing, smelling, and hearing rather than as a separate faculty.

Unquestionably Mr. Beck, in advancing his theory, is justified in laying stress on the probability of animals below man having retained some things which have been dissipated in the gradual rise of humanity; on that head he will find many to agree with him.

Thus it is quite reasonable to think that birds may have kept in a most efficient form something which human beings

either never had, or which is now lost to them. It is undeniable that a food-finding sense exists in many insects: this may be taken as established, so why not in birds, or at any rate in some birds? We must not, however, allow ourselves to be carried away by this alluring theory—a theory which has been alluded to in discussing the Vulture puzzle—to too great an extent.

As for the Vultures, I have already dwelt upon the difficulties which still beset that vexed question. The behaviour of these carrion-eating birds has long been, and still is, a matter of speculation, in spite of all which Waterton and others have written. In this connection Mr. Beck relates an incident which took place in Pennsylvania, which shall be given in his own words.

At 9 A.M. on a frosty morning, on the 1st of January, a dog, which was believed to have gone mad, was shot and thrown into a limestone sink-hole. The hole was six or seven feet deep, with an opening of about three feet, the shaft going down at an angle of 45 degrees, so that the carcase of the dog was invisible from above. Three hours after this was done Mr. Beck, who had been present when the animal was killed, returned to the sink-hole, and as he approached, two Vultures (*Cathartes*) climbed out and flapped away, having apparently been at the dog some time, for the flesh about its hams was much eaten. Here it is difficult to account for the finding of the carrion by either eye or nose, but a sixth sense, if there be such a thing, solves the difficulty at once.

We need not go far from home to find examples of behaviour very similar to what is here related of Mr. Beck's Vultures. Such are the incidents which have from time to time been put on record about the Kingfisher (*Alcedo ispida*) and our familiar Wood-pigeon (*Columba palumbus*). If a piece of water be stocked with young trout, or any small fry, most people will admit that the Kingfisher is pretty sure to find it out, yet it is hardly conceivable that the fish can be scented, although they might be seen. A case in point is furnished by Mr. J. E. Harting in his 'Birds of

Middlesex' *. A small pond in a garden at Muswell Hill was emptied for the purpose of cleaning, but there still remained about three inches of water, and into this shallow pool there were turned by the owner four dozen very small Prussian carp. The following day a Kingfisher appeared, and continued to visit the pond daily until nearly all the little carp had vanished: yet no Kingfisher had been seen in the neighbourhood before the stocking of the pond, and none were noted by the observer, Mr. J. H. Belfrage, afterwards.

The distance to which scent can, under the most favourable circumstances, be carried by wind or any other agency has some bearing on Mr. Beck's story; but this is a point very difficult of elucidation, and scarcely comes under the category of ornithology. Macgillivray mentions an instance in which Ravens in the Hebrides appeared to have smelt carrion at a distance of six miles †. Also a somewhat similar story is related by Saxby ‡, and there are other anecdotes of much the same nature. For scent to be wafted to such great distances certainly seems extraordinary, but our knowledge at present is almost nil, so conjectures are useless.

We shall be the more ready to accept Mr. Beck's plausible theory of a food-finding sense if we remember that in birds there undoubtedly is such a thing as a homing sense. A homing sense exists in migratory birds which it is impossible to be blind to, whatever may be alleged to the contrary. Granted that birds are the possessors of marvellous vision, we may safely aver that the thousands of all sizes, from an Eagle to a Golden-crested Wren, which cross great seas, would never reach their objective year after year in the numbers they do without some aid of this kind, which is best denominated a homing sense—a something which holds migratory birds to a true course between widely separated points.

To this unconscious homing instinct a food-finding sense

* 'Birds of Middlesex,' p. 122.

† 'History of British Birds,' i. p. 507.

‡ 'The Birds of Shetland,' p. 122; 'Zoologist,' 1864, p. 9125.

would be analogous, and if we credit one, there is no valid reason against believing the other; but there is one thing which a food-finding sense (if we grant it) would be no help in explaining—it cannot show how birds realise the presence of an enemy. Here scent must surely come into play.

Can Birds scent one another in the breeding-season.—There still remains one other matter connected with scent, although it turns on a very different pivot from the preceding arguments, and that is its possible connection with the mating of birds. Undoubtedly the gift of scent, although not actually needful, would be an assistance to mating in many cases, especially where species are scarce and individuals far apart, as must often happen when the usual area of distribution has been exceeded. If a Golden Oriole or a Hoopoe comes to England in May, prepared to breed, the chance of its meeting a mate is somewhat remote. If a Scops Owl or a Stilt Plover goes to Holland for the same purpose at that season it is equally unlikely that it will at once come across a partner, but given the assistance of scent and we can understand how birds comparatively far apart may be drawn together.

Sir Ray Lankester was of opinion that scent was employed in drawing the sexes to one another. "There is no doubt," he writes, "that animals of the same species are attracted to one another by smell, and that distinct species have distinct smells" *. He is not here referring to birds, but there seems no reason why they should not be endowed in this way just as much as beasts and insects.

The singularly quick re-mating to be sometimes remarked in birds which have been widowed, purposely or accidentally, after pairing is perhaps in favour of their being able to smell one another, but then we must not overlook their acuity of sight.

Mr. George Bolam, who has had opportunities of watching many a Raven in Northumberland, is not the only naturalist who regards their speedy re-union—sometimes under the most disadvantageous circumstances—as a matter for

* 'Diversions of a Naturalist,' p. 208.

marvel *. It is the same with Carrion Crows. They easily get fresh mates when widowed; for instance, one of a pair was five times shot from the nest in Dumfriesshire before the last survivor deserted the familiar tree †.

Similar cases of broken partnerships replaced with noticeable—and in some cases unaccountable—celerity are remarked of several other birds—viz., of the Merlin (*Falco æsalon*) by Henry Seebohm ‡, and of *F. peregrinus* by Knox §, Gladstone ‖, and Walpole-Bond ¶, and of the Hobby by Stevenson **.

But the most curious case of the kind was one communicated to the 'Scotsman' of 14 February, 1914. During the previous summer a pair of Peregrine Falcons had nested at Strathmore in Sutherland. The stalker of the beat shot the male, but in a day or two his place was taken, and the stalker trapped another male. It was not long before a third appeared, and this time the stalker killed them both. It was now concluded that there was an end to the family, but not so. Two more Peregrines soon came on the scene, and successfully hatched and brought up their young in the same eyrie where the first pair had been killed.

All these cases are very curious, and different enquirers will draw different inferences from them, any one of which may be the right one. It must not be forgotten that in many Moths, and in other insects as well, the attraction which females exercise over the males has long been admitted, and the very extended flights they are known to take in consequence.

* 'Birds of Northumberland,' p. 203.
† H. S. Gladstone *in litt.*
‡ 'History of British Birds,' i. p. 38.
§ 'Ornithological Rambles in Sussex,' p. 106.
‖ 'Birds of Dumfriesshire,' p. 214.
¶ 'Rarer British Birds,' p. 240.
** 'Birds of Norfolk,' i. p. 18.

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See also American Assoc. for Adv. Science, Sec. F, Zool. (1908).

The species, the olfactory lobes of which Dr. Strong has figured, are *Struthio camelus, Dromæus novæ-hollandiæ, Turtur risorius, Fulmarus glacialis, Machetes pugnax, Pseudotantalus leucocephalus, Leptoptilus crumeniferus, Phœnicopterus roseus, Catharistes urubu, Circaëtus gallicus, Chrysotis auripalliata, Coccyzus erythrophthalmus, Motacilla alba, Coccothraustes, Corvus corax.*

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(5) A. Klinckowström. "Les lobes olfactoires du *Fulmarus glacialis*." (Biol. För. Förhandl. Stockholm, Bd. iii. 1890, p. 10 ; 1 fig.)

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(7) "Observations on the Fauna of Norfolk," by the Rev. Richard Lubbock, edited by T. Southwell.

(8) "Outardes Pluviers et Vanneaux," par Paul Lafourcade. (Paris, 1890.)

(9) "The Occult Sense in Birds," by Herbert H. Beck. Delaware Ornithological Club. Reprinted in 'The Auk' (vol. xxxvii. 1920, p. 55).

(10) "Ornithologie Européenne," par Degland et Gerbe, 1867, tome ii. p. 98.

XIV.—*Notes on the Nest and Eggs of* Stenostira scita (*Vieill.*). By H. W. James.

I have not met with any other collector in South Africa who has found the nest and eggs of the Fairy Flycatcher; neither, so far as I am aware, have the nest and eggs ever been described.

The nest is a rare one, not on account of the rarity of the bird, but from the careful and clever way in which it is concealed. In the Cradock and Tarkastad districts of Cape Colony this beautiful little bird is by no means rare. Its favourite haunt is the scrub on the banks of the Fish, Tarka, and Vlekpoort rivers. I have lived and collected along those rivers for the last fifteen years, and, although I have always been on the look-out for nests of this species, I only succeeded in finding six in that time. Unless one sees the bird carrying nesting material, the chances of finding a nest are very small.

My first nest I found quite by accident. Mousebirds, *Colius colius* (Linn.) and *Colius indicus* (Lath.), had been taking such heavy toll of my fruit that I decided to lessen their numbers, and at the same time provide food for a pair of tame Kestrels. The first Mousebird I shot fell into the centre of a thick "wolvedoorn" hedge. The only way to retrieve it was by lying flat down and wriggling my way in towards the centre of the hedge—the "wolvedoorn" is a prickly, dense-growing shrub, making this no easy matter. On reaching the centre of the bush I was able to kneel up, and, to my surprise and, I may add, pleasure, found, a few inches from my face, a nest of *Stenostira scita*, cleverly hidden amongst the dead overhanging branches and containing two eggs.

I crept out again and tried to locate the nest from outside, but although I knew exactly where it was I failed to see it.

All the time I was near the nest the little owners kept up an incessant chattering, and often came within a few inches of my head.

I found two more nests in subsequent years in the same

hedge, both equally as well hidden as the first, and only found by laboriously investigating every inch of the hedge.

The other three nests were found by following birds carrying nesting material. One was placed in a gannabosch. This bush grows to an average height of six feet. The one in which the nest was built had a stem about 2½ inches in diameter. Nine inches from the ground three minor stems sprung from the main stem forming a deep and perfect fork. The nest was placed in this fork, and so cunningly concealed that it was quite impossible to see it even when only a foot or so away. This nest contained three eggs—the only one I have ever found with more than two.

Another nest was built among the debris from the river caught up by a thorn-tree growing on the banks of the Fish River. A high flood had bent the tree—a small one—and thrown against it a mass of debris in such a way as to form under it a sheltered hollow, shaped like a Kaffir hut. The nest was placed right inside this hollow, and well concealed among the debris, about three feet from the ground.

The last nest I found was in a thorn-tree. The lower branches had died and dropped down, forming a dense mass round the trunk. I found the nest after forcing my way in. It was deep in near the trunk, and cleverly concealed between two thickish branches. It took me some time to find it. I must have looked at the actual spot several times before I detected the nest. It was nearly completed when I found it, but the birds did not desert it, and ten days later I found it contained two eggs.

All the nests were exactly the same. They were built of dead leaves, dead grass and cobwebs, with the interior thickly lined with wool and feathers. The walls were thick and compact, and the whole beautifully and neatly finished; the outside was perfectly round and smooth. In shape they were deep cups, measuring internally 1½ inches in diameter and 1¼ inches deep. In every instance they harmonised perfectly with their surroundings.

As mentioned above, one nest contained three eggs; the others, two. In shape the eggs are broad ovals, and have a

fair amount of gloss. I have three clutches in my collection, and as they show a good deal of variation I will describe each one.

(1) Ground-colour, pale greenish-buff; round the broad end of the eggs a very indistinct, almost obsolete, zone of a slightly darker shade of the same colour.

(2) Ground-colour, pale drab; round the broad end of the eggs a distinct zone of dark-buff.

(3) Ground-colour, creamy-buff; round the middle of the eggs a broad and very distinct zone consisting of confluent blotches of brown. In this clutch the whole shell is covered with small, almost obsolete, spots of pale greenish-brown.

The measurements of the eggs are in inches, ·55 to ·65 long by ·43 to ·46 broad.

All nests were found in the months of October and November.

XV.—*On the Eggs of the Puffin,* Fratercula artica.

By Percy F. Bunyard, F.Z.S., M.B.O.U.C.

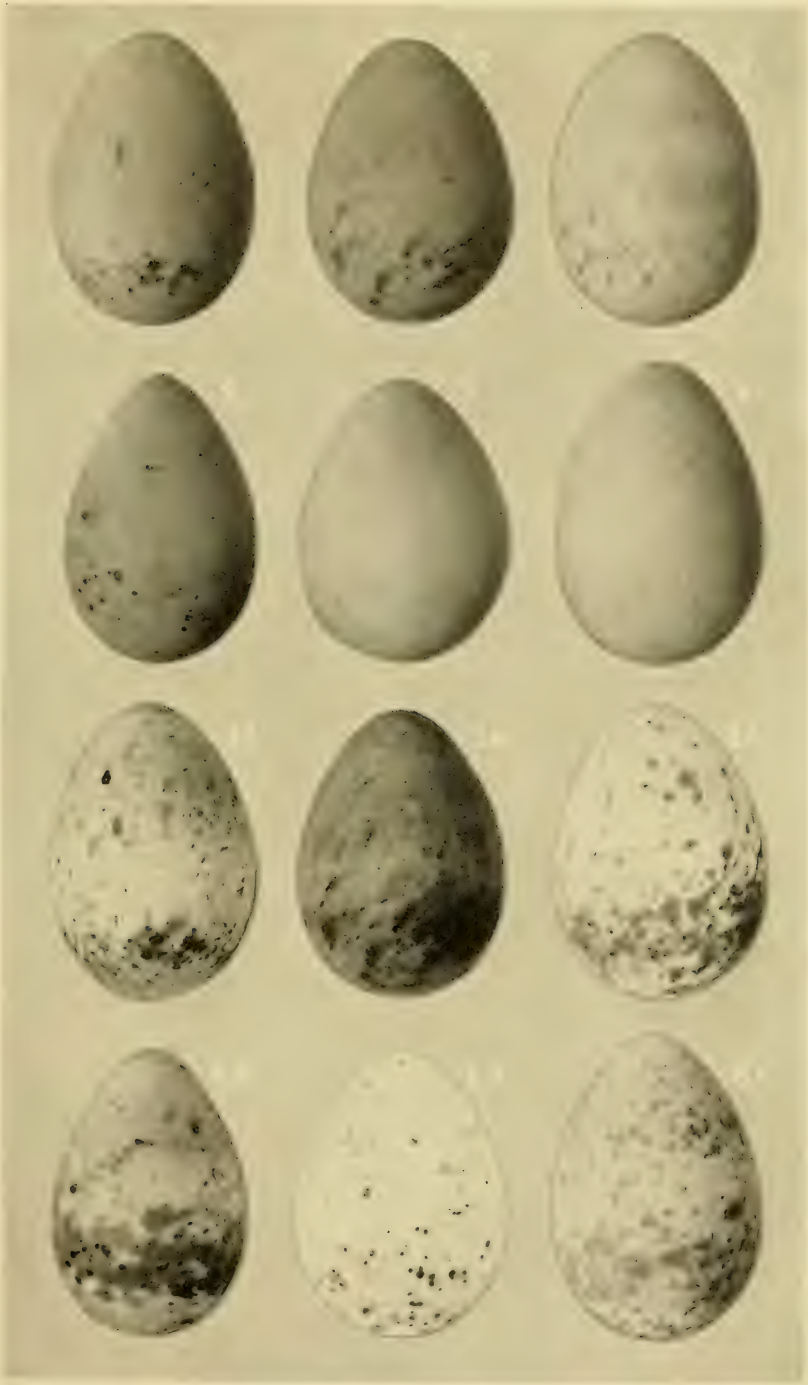
(Plate II.)

Very few eggs have been more neglected than those of *Fratercula arctica.*

In most collections they are generally represented by one or two indifferent specimens, selected for their superficial markings. Those which appear to be unmarked are regarded as uninteresting or wholly unworthy of a place in the cabinet.

From a strictly oological point of view these apparently unmarked eggs are most interesting, and on a closer examination many of them will be found to be, not only well-marked, but often heavily pigmented.

To the unaided eye, however, nine-tenths of these markings are invisible, owing to their being very deep-lying. In order to reach this pigment it is necessary to remove, by scraping, the outermost glutinous layer, and also the outer lime layer, before the pigment is reached; *this, as*



EGGS OF FRATERCULA ARCTICA.

Figs. 1-6 unilluminated Figs. 1a-6a illuminated.

with nearly all other eggs, will be found to be the same colour as the superficial pigment. The thin lime layer which covers the underlying pigment is entirely responsible for the various shades of grey and mauve which are partly visible to the unaided eye, and which are usually called shell or underlying markings.

I found, however, that the scraping away of the lime was not altogether satisfactory or sufficient to expose the whole of the hidden pigment, or to give an accurate idea as to the density and abundance of the pigment; pigment was found overlying pigment with the thinnest possible lime layer in between. There was also the danger of the whole structure collapsing, it being necessary in some instances to remove the lime almost to the membrane.

If the egg is held to a strong artificial light, and it is examined through the blowhole, much of this pigment can be seen; even this method is insufficient, and only partly reveals the great beauty of the eggs as a whole.

Both of the foregoing experiments, I believe, are known to many oologists, and are perhaps sufficient for some purposes; they do not, however, as already pointed out, convey the slightest idea as to how heavily pigmented these eggs really are.

The following original experiment—of which I gave a demonstration at the last oological Dinner on 14 September, 1921, and again at the October meeting of the B.O.C.—gives the most remarkable results, as the photographs (Plate II.) appended to this article testify. The upper six eggs (figs. 1–6) on the plate are unilluminated, the lower six (figs. 1 *a*–6 *a*) are the same eggs illuminated with electricity from inside the eggs; from the lower figures it will be seen that the eggs are as well marked as some of the most heavily pigmented eggs of *Alca torda*, to which it will be seen, when illuminated, they have some affinity in regard to the form and arrangement of the markings. They were illuminated from six dry batteries with half-inch bulbs inside each egg.

Puffins' eggs are obviously in a very rudimentary stage. What useful purpose do these concealed markings serve? They cannot in any way help to protect or conceal the eggs.

Is there a reversionary tendency? I am prompted to answer my own question in the negative. They are, in my opinion, passing through a fairly rapid transition stage, *i. e.*, the pigment apparently is becoming more superimposed; recently taken eggs show a distinct tendency in this direction, many eggs exhibiting large, well-defined superficial markings. Eggs taken thirty or forty years ago were rarely surface marked. Some of those figured in various works were obviously picked for the purpose, and were not typical eggs of the times.

My opinion in regard to this is based on the following facts:—In 1919 these eggs were collected in large quantities for food, and I had the opportunity to examine some hundreds from Barra. There was scarcely an egg among them that was not well marked. I was so struck by this interesting fact that I got into communication with the collectors who had gathered Puffins' eggs for many years, and I found they had already noticed these well-marked eggs, mentioning that the eggs they collected thirty to thirty-five years ago were nearly all unmarked.

If Saunders's, Seebohm's, and Dresser's descriptions of the ground-colour were characteristic of the eggs of this time, *i. e.*, white or dull white, there are strong grounds for assuming that the ground-colour has also considerably changed.

My own experience is that white correctly describes the eggs of that time. I now find the following ground-colour in recently taken eggs:—Ochraceous, buff, cream, greyish white, white-tinged mauve, and pale pink; the last, however, soon fades.

The colour of the pigment, which is brownish black to pale brown, remains unchanged. The shape is constant, broad pointed ovals predominating. Those, however, which I collected in the Faroes in 1905 are very distinctive; they are longer and narrower, as the following measurements show:—66·3 × 41·7, 63·2 × 40, 64 × 41, 63·2 × 42 mm.; the average measurements of ten British eggs (in my own collection) are 61·4 × 43·2 mm.

XVI.—*The Birds of Jhang District, S.W. Punjab.* Part I. *Passerine Birds.* By Hugh Whistler, F.Z.S., M.B.O.U., Indian Police.

(With a Map—Text-figure 9.)

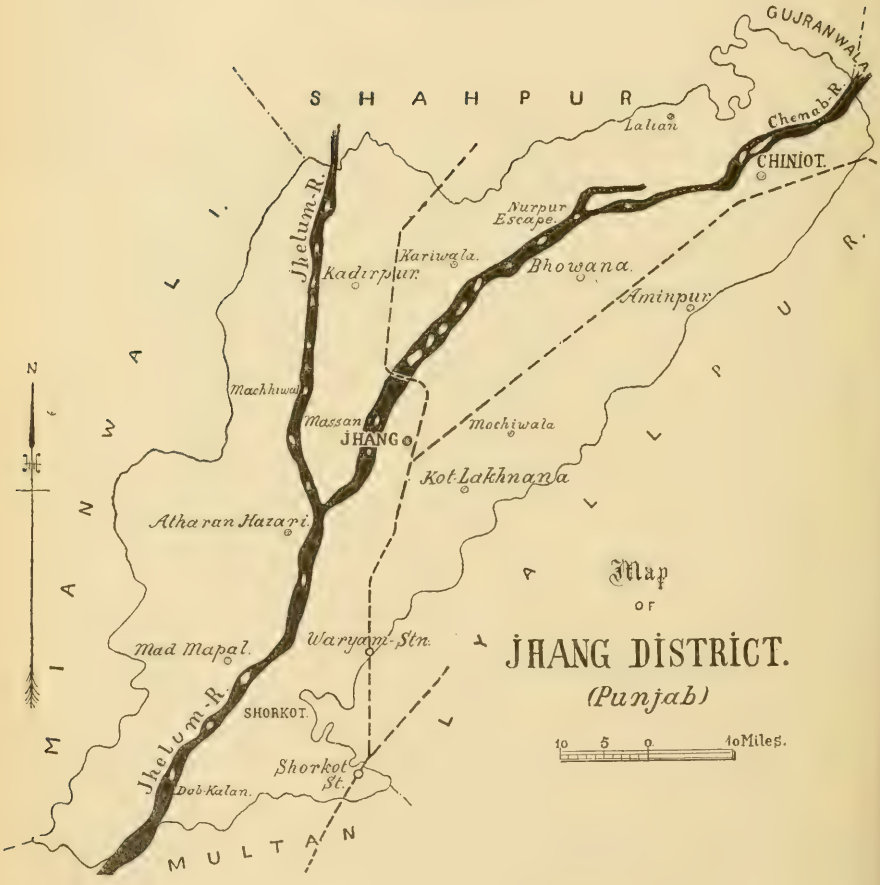
Introduction.

Physical Characteristics of the District of Jhang.

The District of Jhang takes its name from the ancient town of Jhang which, together with the more modern town of Maghiana, forms the Headquarters of the administrative area. The district lies between north latitude 30° 50′ and 32°, and east longitude 71° 50′ and 73° along the banks of the Chenab and Jhelum rivers, about the confluence of which it may be said to pivot. In shape it forms a long, narrow slab along the banks of the Chenab, with a length of 120 miles and an extreme breadth, at right angles to that river, of 40 miles. The present area is something over 3000 square miles. The adjoining districts are: on the north, Shahpur and Gujranwala; on the east, Lyallpur; on the south, Multan and Muzaffar-Garh; and on the west, Mianwali and Shahpur. The district for administrative purposes is divided into the three tehsils of Chiniot, Jhang, and Shorkot, each with their headquarters at the respective towns of those names.

The outstanding characteristic of the district is the presence of the two large rivers. The Jhelum has a short course of only 40 miles in the north-western corner of the district until it is absorbed by the Chenab, which after a separate passage of some 80 miles from the north-eastern boundary of the district carries their combined waters another 40 miles to the Multan and Muzaffar-Garh borders. The course of both rivers is very tortuous and is constantly changing. Each river is continually working out a series of loops, which gradually deviate farther and farther from the general direction of the stream until at last it breaks back into a more direct course, only to begin another loop. A general trend towards the west is, however, observable.

Text-figure 9.



During the winter months both rivers, robbed of their waters by the canal systems, dwindle to slow, narrow, shallow streams tracing a winding course among the sands and islands of the river-bed. With the melting of the Himalayan snows they rapidly swell until, from about April to October, they present the appearance of a vast, swift flood, a mile or so in width, with only the larger islands uncovered. Rises in the level are very sudden though often short-lived, and cause floods which frequently extend three or four miles into the surrounding country. This riverain area, including the longer islands, is very consistent in character throughout the length of the district. The sandy soil, enriched in varying degrees by successive layers of silt, is intersected by numerous channels, usually dry and sandy, but filling with any rise in the river. Extensive belts of tamarisk scrub, often so thick and strong that a horse can with difficulty pass through, are diversified by small pieces of cultivation in which crops of wheat, grain or vetches are grown along the edge of this area; and often extending into it are high-lying strips and patches of waste ground of a sandy texture covered with a thick growth of Sarkana grass.

Along the western edge of the Jhang and Shorkot tehsils lies a high plateau, known as the Thal, more or less completely covered with belts and dunes of blown sand, which alternate with hollows of fairly good soil studded with stunted trees and bushes. The whole effect is most monotonous, and on the only occasion when I visited this tract it appeared to contain but few birds.

The remainder of the district may be described as illustrating the conflict between nature and civilization which ensues when modern engineering has brought canals into a region semi-desert by nature. Large stretches of cultivation, wheat, cotton, and turnip crops, sparsely studded with Kikar and Shisham trees, are diversified with patches of waste ground covered with wild Caper and "Lana" plants.

In places, notably towards Khiwa and Shorkot, there extend wide plains of this barren and desolate land, awaiting only a further extension of the canal system. In parts,

particularly between the fork of the Jhelum and Chenab rivers, the soil is notably sterile and impregnated with saltpetre; so that for miles the traveller may pass over dead, dusty, whitish soil which produces only coarse, worthless grass, a semi-desert flora, and thorny bushes stunted by the grazing of innumerable goats and camels.

On both sides of the Chenab at Chiniot occurs a curious outcrop of small rocky hills similar to the Kirana Hills of Shahpur, and Sangla Hill in Gujranwala District. From them one may look across to the Salt Range some 40 miles away across the Jhelum River; yet geologically these hills have no connection with the Salt Range, but appear to be the last outposts of the Aravali ranges. These hills are very steep, in ridges with a north-east to south-west strike; they are very bare, covered with broken rocks and stones with sparse grass and a few stunted bushes. They rise from a flat plain, after the manner of drawing of hills by childish hands.

Two localities deserve special mention from their interest both to the sportsman and the ornithologist; both owe their present characteristics to the activity of the Canal Department. In the Barana direction the Nurpur Canal escape, originally a channel constructed to return excess water in the canals to the Chenab River, has caused the formation of a series of huge reed-beds and thickets of "Pampas grass" extending for some five miles, sometimes dry, sometimes a swamp; this in the cold weather is the haunt of numerous wildfowl, and at all seasons forms the home of numerous interesting birds.

About Massan the tail of another branch of the canal is used as an outlet to run off the surplus water, and this has caused the formation of various jheels and reedy channels which formed one of my favourite hunting-grounds; more particularly as the broken nature of the ground and the separate channels and patches of water were most fully adapted to the needs of the falconer in search of duck.

In the whole district there is nothing that may be dignified by the name of a wood, except a small reserve belonging to the Forest Department on one bank of the Jhelum River. This unfortunately I have not been able to visit.

The prominent trees of the district are few in number. The most abundant and most useful is the Kikar (*Acacia arabica*). The next most abundant species is the Shisham (*Dalbergia sissu*), usually associated with cultivation.

The date-palm (*Phœnix dactylifera*) grows luxuriantly on the banks of the Jhelum and below the junction of the Chenab and Jhelum; elsewhere it is rare.

Of the more stunted forms of tree, the most noticeable are the Ber (*Zizyphus jujuba*), the Jand or Jant (*Prosopis spicigera*), the Jal (*Salvadora oleoides*), and the Tamarisk (*Tamarix articulata*).

Amongst the semi-desert flora may be noticed the wild Caper (*Capparis aphylla*), the Uck (*Calotropis gigantea*), and various small plants such as the Camel-thorn and the "Lana" (*Sueda* and *Salsola* spp.).

The Sarkhana grass (*Saccharum munja*) is a great feature of the district, patches of it often extending for miles. As fodder and in the manufacture of articles connected with village life its uses are innumerable.

The climate of Jhang is similar to that of the remainder of the south-western Punjab. In the winter the cool, bright days, the cold nights, and the crisp, fresh mornings are exceedingly pleasant; about March the weather grows perceptibly warmer, till April and May culminate in the intense burning discomfort of June and the period that precedes the rains which break about July. The discomfort of the hot weather does not, however, cease until September, and the cold weather proper only begins towards the end of October. For the most part the nights are fairly cool, and afford some relief after the heat of the day. The rainfall is very light. 10 inches being about the average for the year. It may be noted that the monsoon of 1917 was abnormally heavy, the amount of rain falling being actually the heaviest on record with an excess of + 20 % for the whole of the plains of India. The year 1918 was, on the other hand, unusually dry, with a partial failure of the monsoon. During 1919 weather conditions were on the whole normal.

Communications within the district are exceedingly bad.

as there are practically no metalled roads and the railway arrangements are primitive. Almost all my travelling has been on horse- or camel-back.

Such are the physical characteristics of the district of which I took over Police administrative charge on the 19th of October, 1917, remaining there for over two years until relieved on the 17th of March, 1920. For the whole of this period, with the exception of two months' absence on military duties in June and July 1918 and one month's leave in November 1919 and a few short spells of casual leave, I was either at Jhang or toured in the interior.

Camp-life is a great feature of a police officer's duties: he has to visit and inspect the various police stations, and all areas in his charge come to notice either from its own local importance or for some reason connected with the administration. In the course of it he acquires a most detailed acquaintance with the whole of his district. The circumstances of my life at Jhang were therefore ideal for an ornithologist: my observations were not made merely at one isolated spot, but they covered an area of some 3000 square miles, different parts of which were visited at all times of the year. A consultation of my official registers shows that I spent in all 245 days on tour away from headquarters, and travelled over 1700 miles on horse- or camel-back on official duty, to keep no count of the many miles which I walked out shooting or collecting. It may be mentioned that often for a month or more at a time I saw no white man, and was in consequence entirely dependent on my own resources for amusement when the day's work was done: my leisure was therefore devoted to sport or ornithology, and my opportunities for them were immense. About the time that I arrived at Jhang my friend and "fellow Ibis," Dr. Claud B. Ticehurst, arrived in India in the R.A.M.C., and was fortunately stationed at Karachi, which is comparatively handy, as distances go in India, for Jhang. On two occasions in December 1917 and December 1918 he was able to obtain some leave and join me. For both visits I arranged a short tour in those parts of the district most suitable for sport and ornithology. The notes

and specimens obtained by Dr. Ticehurst while he was with me have been incorporated in this account.

In November 1871 Hume passed down the Jhelum and Chenab rivers through Jhang District on the commencement of his famous Sind tour, described in 'Stray Feathers' (vol. i.). The few days thus spent by him on a boat with occasional landings comprise the whole of the ornithological work done in Jhang District before my arrival there, and the probabilities are that many years will again elapse before another naturalist works the locality. Hence I have thought it desirable to give a somewhat detailed account of the birds observed and their status : and to this I am the more inclined from a realization that the natural characteristics of the Punjab are undoubtedly changing very rapidly in response to the effects of the vast irrigation system which is converting what was once almost a desert into one of the granaries of the Empire. This change, with its resulting increase of population and various minor reasons, such as the increase of firearms, render it desirable to leave on record for the naturalist of the future a fairly detailed picture of the ornithology of this part of the world.

Ornithologically, Jhang District is of considerable interest. There is a period from the middle of May to the middle of July when the number of species is at its poorest, both in numbers and in interest. Such birds as there are, being the breeding forms typical of the Indian subregion, mostly common and widely spread. Then about the middle of July the Roller and the Rosy Pastor arrive as the harbingers of the autumn migrations, which bring vast hordes of birds through the district in August and September ; the passage birds pass on, but leave in their wake the true winter visitors who have come to spend the whole winter with us ; these are numerous, both in species and individuals, and are in the main of Palæarctic forms. Desert species are strongly represented. Throughout the winter there is a good deal of movement, dependent doubtless on climatic conditions in other areas, and about January in particular interesting stragglers may be expected. In February the influence of the

spring migration begins to be felt, and through March and April there is a general rush which dies away early in May. Such is the cycle of the ornithological year at Jhang.

Several well-defined lines of movement run through the district. The Jhelum and Chenab rivers are a route for water-birds passing up to Central Asia. A most marked route N.W. to S.E. in autumn and in the opposite direction in spring is shown by the movements of the Sand-Grouse and Cranes. Short-billed Minivets and Great Tits attest the presence of a direct north to south movement from the western Himalaya, while Eversmann's Redstart and the Meadow-Bunting show an equally marked east and west movement. The southern half of the district touches the fringe of certain well-marked migration movements in Sind; as, for example, is shown by the occurrence about Shorkot of *Agrobates g. familiaris*, *Muscicapa striata*, and *Sylvia communis icterops*, which occur commonly in Sind alone of all the plains of India as autumn passage migrants.

The inhabitants of the district pay little or no attention to the wealth of bird-life around them, and are but little interested in sport. The leading men throughout the district possess guns, but they seldom use them for sport; some menial servant is sent out at intervals to procure a few Partridges or Duck for the pot, and the owner of the gun considers it too much trouble to kill game for himself. Falconry is a sport indigenous to the soil, but on my arrival in the district I found that although many of the important landowners had at one time or another possessed Hawks, practically all had given them up. The discovery that their new District Officer was himself a keen falconer, and had arrived with two native falconers and several trained Peregrines and Shahins, gave a temporary impetus to dying customs, and a number of Goshawks were imported into the district; these were prominently paraded whenever I appeared, and a miscellaneous number of Falcons were also kept; but the old-time keenness was clearly dead—killed by the many changes of the last fifty years. And although some of the Goshawks were taken out to show me sport, I do not remember that I ever witnessed a

kill. The majority of the birds were never properly trained, and after my departure were doubtless given up again. Yet the district is most suitable for the sport of falconry, and during the winters of 1917–1918 and 1918–1919 I enjoyed most excellent sport with my own trained birds, usually preferring to see a small bag killed with the Falcons to a larger one obtained with my gun. It may be of interest to append the list of game killed by my own birds.

SEASON 1917–1918.

Mallard	8	Pond-Heron	20
Gadwall	2	Rollers	1
Teal	2	Grey Partridge	16
Houbara	2	Norfolk Plover	3
Red-wattled Lapwing	51	Purple Coot	1
Green Plover	1		

SEASON 1918–1919.

Houbara	4	Grey Partridge	6
Mallard	10	Pond-Heron	4
Gadwall	5	Red-wattled Lapwing	21
Spot-bill	2	Rollers	6
Pochard	1	Purple Coot	1
Teal	19	Norfolk Plover	1
Shoveler	4	Great Stone-Plover	3
Smew	1		

During my stay at Jhang a collection of between 1000 and 1200 bird-skins was made, mostly with my own hands, and on them this account is based. These skins are now with the remainder of my collections in the museum at Grove House, Lowestoft. The list contains the names of 268 species, in addition to 8 species whose claim to inclusion cannot be fully admitted as yet; these are distinguished by square brackets. Further observation would certainly extend the number of species on the list.

The nomenclature adopted is largely based on Dr. Hartert's invaluable work, 'Die Vögel der palaärktischen Fauna': to it and the author I desire to acknowledge my indebtedness.

Finally, I wish to record the fact that this paper is due to the help and encouragement which I have received, not only

in its preparation but for years past in all branches of ornithology, from Dr. Claud B. Ticehurst. To him I tender my warmest acknowledgments.

Corvus corax laurencei Hume. (3 skins.)

The Raven is a common and resident species, generally distributed throughout the district, found alike in the canal areas and on the most desolate of the semi-desert plains. It is always to be met with in pairs, and these probably do not move about much, as year after year nests are to be found in the same locality, often in the same tree.

Seventeen nests containing eggs were examined. Three of these were found in January (on the 18th, 19th, and 29th). Twelve were found in February. Two were found in March on the 15th and 17th. Excluding two nests with incomplete clutches, I found one clutch of 6 eggs, six clutches of 5 eggs, five clutches of 4 eggs, and three clutches of 3 eggs. The only nest examined with young contained two nestlings.

Eleven nests were in Kikur-trees, three in Shisham, and one in tamarisk. The other nests I did not see personally. All nests were of the same type—large, rather untidy, stick nests, thickly lined with a miscellaneous conglomeration of sheeps' wool, goats' hair, camels' hair, rags, and cotton. All nests were in cultivation and none were seen out on the barren plains. Some were placed in solitary trees out in the fields, others in gardens or at the sides of roads ; some were in trees growing over the huts round small irrigation wells, and in one instance the nest was in a tree within the railway fencing. These Ravens are absolutely indifferent to the presence of man, and indeed affect his neighbourhood.

A series of 64 eggs shows considerable variation, but no type which has not already been included in Hume's full description of the eggs of this species. One clutch of 4 eggs gives abnormally long measurements : viz. 57·5 × 34, 55·5 × 33, 55 × 33, 55 × 33·5 mm. Excluding this clutch 60 eggs yield the following measurements :— Length 42·5–52·5 mm., breadth 30·5–34·5 mm. ; average 47·5 × 33·1 mm.

It is remarkable that in both years there seemed to be an unusual number of Ravens about headquarters in September. As the Raven is reported to be a winter visitor to Upper Sind, these birds were probably migrants.

Corvus splendens zeugmeyeri Laubm. (14 skins.)

An abundant resident, generally distributed wherever there are human habitations. There was a curious strain of albinistic birds frequenting the Civil lines; two of these were shot and preserved, and their description will be found in Journal Bombay N. H. Soc. (vol. xxvi. pp. 290 and 843). A similar chocolate-and-cream coloured bird was seen in the same place after their demise, and one or two normal birds with just some white in the primaries were also seen in the same neighbourhood. The chief interest in these birds, to my mind, lay in the fact that they enabled one to realise what a sedentary bird the House-Crow is: with the exception of the usual nightly move to the roosting-place (in Jhang the big trees of the circular road), each individual keeps to a very small area and hardly moves from it. These abnormal birds consorted with their normal brethren and suffered no persecution.

Small parties of this Crow when on the evening flight, have the habit, so often seen in flocks of Rooks at home, of suddenly swirling down from a height in the sky almost to the ground. Vultures sitting gorged on the ground are frequently worried by Crows, who keep on jumping on to their backs in a sort of game of Tom Tiddler's ground. In a somewhat similar fashion I have seen a Tawny Eagle feeding in a tree much worried by Crows, who kept on stooping at him through the branches and striking with their feet on the back of his wings and tail. The tiny fish which are stranded in pools and channels as they dry after the floods of the rains are eaten in great quantities by Crows.

Fresh eggs are to be found during the first half of July. A series of 27 eggs gives the following measurements:— Length 32·5–44, breadth 23–27 mm.; average measurement 36·7 × 25·8 mm.

Dendrocitta vagabunda (Lath.). (1 skin.)

A resident and sparsely distributed throughout the district. I have seen a pair frequenting the verandah of a rest-house in order to feed on the common yellow wasps that built their hives in such places.

Sturnus vulgaris dresseri Buturl. (1 skin.)

A female was shot by me at Massan on 9 February, 1918, from a flock of *S. v. poltaratskyi* and *S. v. porphyronotus*. This appears to be the second record for the Punjab, the first (a male) having been obtained at Khanewal, a little south of Jhang, on 30 December, 1917, by Capt. C. B. Ticehurst.

Sturnus vulgaris nobilior Hume. (2 skins.)

Two males were obtained early in 1918, at Massan on 7 January and at Mochiwala on 4 February. The latter was shot from a flock of *S. v. poltaratskyi*. These appear to be the first records for the Punjab proper.

Sturnus vulgaris porphyronotus Sharpe. (11 skins.)

A common winter visitor, occurring in company with *S. v. poltaratskyi*, and obtained on various dates from 8 November to 9 February. All the specimens were shot either at Mochiwala or Massan.

Sturnus vulgaris poltaratskyi Finsch. (20 skins.)

An abundant winter visitor, arriving towards the end of October and leaving at the end of February. Each year a few birds were seen in March, the latest dates being as follows:—10 March, 1918; 6 March, 1919; 11 March, 1920.

Pastor roseus L. (9 skins.)

Although the Pastor visits the district in great abundance, its numbers and its stay are somewhat variable, and are dependent doubtless on conditions connected with the monsoons and consequently its food-supply in other areas.

It is one of the earliest of the autumn passage migrants, arriving in the second week of July and reaching its highest numbers in August and September. The majority of these

birds pass away by the beginning of October, but some remain throughout the month, and in 1917 and 1919 it was fairly common up till the end of December. In the drought of 1918, on the other hand, I saw only a single bird in November and none at all in December.

From January till the end of March the Pastor is away from the district. Two small parties of stragglers seen in January 1918 and March 1920 merely served to emphasise the absence of the hordes of this species.

About the second week of April the return migration sets in, and lasts until about the middle of May, but the species is not nearly so abundant at this season as on the autumn passage.

Acridotheres tristis (L.). (5 skins.)

Resident, most abundant and generally distributed. Breeds from April to July.

Acridotheres ginginianus (Lath.). (2 skins.)

A resident, fairly common and generally distributed. It appears to move about a good deal, and may be migratory to some extent, as my records for August and September are much more numerous than those of any other month.

Oriolus oriolus kundoo Sykes.

A summer visitor, but mostly confined to the canal areas. The earliest and latest dates on which it was observed were 2 April, 1918, and 1 September, 1919.

Dicrurus ater ater (Herm.). (4 skins.)

A resident, generally but sparsely distributed throughout the district, and distinctly less abundant than in the central and northern Punjab. It is probable that there is a slight immigration of breeding birds during the summer.

Uroloncha malabarica (L.). (2 skins.)

An abundant resident and generally distributed. It is particularly partial to the seeds of the "Pampas grass," where it feeds in company with *S. amandava* and *Passer pyrrhonotus*. Eggs were found in August, September, and December.

Sporæginthus amandava (L.). (7 skins.)

A resident and common, but confined to bush and "Pampas grass" jungle in the neighbourhood of water, as at Chund, Massan, and Nurpur.

Carpodacus erythrina roseata (Hodgs.). (2 skins.)

Two males were secured from a small flock in a Kikur-tree in the Police lines at Jhang on 18 September, 1918.

Gymnorhis flavicollis transfuga Hartert. (6 skins.)

An abundant summer visitor, arriving in the latter half of March and becoming common by the beginning of April. The earliest date on which it was observed was 17 March, 1918, at Shorkot, where the species appears to arrive a few days earlier than about Jhang. It breeds in May, and about the middle of August collects into flocks which associate with Sparrows and Buntings in the fields of ripe millet. Not observed after 10 September, 1919.

Passer hispaniolensis transcaspicus Tschusi. (12 skins.)

A winter visitor in flocks, but somewhat variable in its numbers from year to year. It consorts with *P. d. indicus*, often in the neighbourhood of isolated hamlets, and is partial to the seed-heads of the Sarkana grass. It was observed from December until the end of March (latest dates 28 March, 1918; 26 March, 1919), but my records of this species are rather incomplete.

Passer domesticus indicus Jard. & Selby. (14 skins.)

An abundant resident and generally distributed.

Passer domesticus parkini Whistler. (7 skins.)

On the autumn passage of 1918, on various dates in September and October, I noticed a very marked migration of Sparrows; large flocks were to be seen in the evenings flying fast and straight in a south-easterly direction. A lucky chance at one of these flocks secured a male and female, which at once struck me as larger and slightly different in tint from

the common resident bird. Next year I watched for the re-appearance of the bird, and in September I found that large flocks again appeared feeding in the millet-fields with *Gymnorhis flavicollis* and *Emberiza luteola* or passing in a southerly direction. Several specimens were obtained and found to agree with those of the previous year. By this time I was satisfied that these migrant birds were separable from *P. d. indicus*, and I could find no described race with which they agreed. It was, however, easy to conjecture that the race probably came from somewhere in the Himalaya or north of them.

Chance willed that in April and May 1920 I visited Cashmere, and on arrival in Srinagar I at once noted that the House-Sparrow which was swarming there was a larger and differently coloured bird to the common Indian race. A series of six breeding birds was collected, and on my return to England I satisfied myself that these birds were separable from *P. d. indicus*, and I accordingly described them as *P. d. parkini* (Bull. B. O. C. xli. 1920, p. 13). A careful comparison of specimens, allowing for the difference in summer and winter plumages, has satisfied me that the migrant Sparrow which passed through Jhang in numbers on autumn passage must be attributed to the new race.

Flocks of Sparrows probably on the return migration were seen in March and April 1918 and 1919, but no specimens were obtained.

It may be here noted that a male and female Sparrow obtained by me at Ferozepore on 18 and 23 September, 1911, respectively, which were included in my series of *P. d. indicus*, prove to belong to this new race. Magrath has noted (Ibis, 1909, p. 232) that at Kohat vast flocks of a migratory race of House-Sparrows pass through in April and early in May in company with the Spanish Sparrow and the Pastor. It is probable, therefore, that now attention has been drawn to this new race, it will be found to be a regular passage migrant through the Punjab. At Quetta the House-Sparrow is noted as a summer visitor only, so an examination of specimens from there is desirable.

Passer pyrrhonotus Blyth. (15 skins.)

The Rufous-backed Sparrow is a resident species, and is common in the southern half of the district from about the neighbourhood of Chund bridge downwards. North of that it appears to be somewhat scarce, as I only saw a single pair in the neighbourhood of Nurpur escape, which is exactly suitable to its requirements. Kikur-trees and "Pampas grass" in the immediate neighbourhood of water are essential for the presence of this very local Sparrow, conditions which are most ideally fulfilled in the neighbourhood of the embankments which are constructed in connection with the big railway bridges over the Punjab rivers. Accordingly the Rivaz bridge at Chund is one of the main haunts of this Sparrow in Jhang District. Naturally it is most abundant in the riverain area, but where the canals or other channels have taken water further afield, as at Kadirpur, Asabha and Wer, it is also to be found in small numbers. During the winter months it may be found in large flocks, which feed in company with *Sporæginthus amandava* and *Emberiza c. par* on the plume-like seed heads of the "Pampas grass."

Nidification commences in July: eggs and young are to be found in August and September. Both sexes share the work of incubation. The nests are of two shapes—a small, fairly regular, domed oval of the usual Sparrow type, with the opening rather towards the top, or a long, rather straggling structure, looking like two or three of the first type joined together and connected by a through tunnel. These latter nests are difficult to examine, as the long and narrow entrance way is spiked and guarded with the sharp thorns of the Kikur twigs on which it is based.

All the nests are made of the same materials—namely, that mixture of grass, roots, and large feathers so dear to the hearts of the Sparrow tribe in general: there is some attempt at a definite lining with finer materials and smaller feathers.

The nests are placed impartially in Kikur-trees and Kikur-bushes, and I have found none in any other species of tree. The tree-nests for the most part are suspended in the finer

twigs at the ends of the lower boughs, some 10 or 12 feet from the ground, and in consequence hard to reach. The bush-nests are placed some 4 to 8 feet from the ground, often in very small bushes, but are protected by the fact that the grazing of goats and camels on the softer twigs have made the bushes very dense and thorny. Isolated nests are occasionally found; but, as a rule, the species breeds in loosely connected colonies at some lush and shady spot, where the necessary Kikurs are growing, often with other trees, over or close to water, whether in the form of ponds, patches of marsh, or channels.

Of the number of nests that I examined the majority were empty or contained hatching eggs or young. Spirit specimens of young were preserved. Six eggs successfully blown measure: 18 × 13·5, 18 × 13·5, 17·5 × 13·5, 17·5 × 13 mm. (c/4); and 18 × 13·5, 18 × 14 mm. (c/2). Four appears to be the normal clutch, but in one nest I found two eggs about to hatch.

Emberiza calandra calandra L. (2 skins.)

I have already recorded (Journ. Bombay N. H. Soc. xxv. p. 742) the obtaining of the first authenticated specimen in India of the Corn-Bunting from a flock at Massan on 20 November, 1917. Three birds were found by Ticehurst in the same neighbourhood on 22 December. This was after the unusually heavy monsoon of that autumn, and I did not meet with the species again.

Ticehurst failed to meet with it in Sind, and there are no records for India, with the exception of Murray's original record, which has since been discredited. The species is not likely, therefore, to be a regular visitor, even to the north-west of India.

Emberiza leucocephala S. G. Gmel. (1 skin.)

A male was shot at Kariwala on 15 February, 1918. It was in a Kikur-tree with some other Buntings not definitely identified.

Emberiza icterica Eversm. (9 skins.)

A common autumn passage migrant, appearing in flocks which feed in the fields of ripe millet. Observed between 22 July and 14 September, the majority being met with from the second week of August until the end of the first week in September.

[**Emberiza stewarti** Blyth.

A Bunting seen at Mochiwala on 9 January, 1918, but not obtained, was probably of this species.]

Emberiza striolata striolata (Licht.). (1 skin.)

A male was obtained by Ticehurst in the Nurpur escape on 20 December, 1918. A fine adult was seen by me at Sadaq Nihang on 19 September, 1919. I also wounded and lost in the river-bed at Chiniot on 22 February, 1919, a Bunting which appeared to be of this species.

Emberiza schœniclus pallidior Hartert. (11 skins.)

A common winter visitor to the district, frequenting suitable reed-beds and patches of Pampas grass throughout the riverain area. It arrives about November (earliest date 16 November, 1918) and leaves about the middle of February. This race differs from the typical *E. s. schœniclus*, in addition to the points given by Hartert, in the paler appearance of the under parts, due to less heavily streaked flanks.

Emberiza cia par Hartert. (14 skins.)

This race of the Meadow-Bunting, and not *E. c. stracheyi* as the records of Punjab ornithology erroneously lead us to expect, is a common and generally distributed winter visitor to the district. It arrives early in November and continues common until the end of February. A few individuals are to be met with in March and April. It is very partial to cotton-fields and "Pampas grass" jungle.

The female in winter plumage has the blue-grey of the throat and breast very pale and dull, and much sullied with greyish-ashy fringes and brown tips; it may be distinguished

from the female of *E. c. stracheyi* by size, general paleness of plumage, and the more uniform appearance of the head, in which the stripes are not so clearly defined as in the Himalayan race. The edges of the coverts and quills of the wings are creamy buff, markedly different from the warm rufous-buff of the same parts in *stracheyi*.

A series of 7 males and 14 females from the Punjab yield the following measurements :—

	Bill from skull.	Wing.	Tail.	Tarsus.
Males.....	12·5–14 mm.	82·5–87·5	75·5–80	19–21·5
Females....	12·5–14 „	78–83	66·5–79	19–21·5

It is interesting to note that all my specimens of Meadow-Bunting collected in the plains of the Punjab in winter belong to this race ; while all examples collected at Simla in June, August, October, and November are clearly attributable to *E. c. stracheyi*, which is, in my opinion, a resident species except for altitudinal movement, and never visits the plains. Statements to the contrary appear due to confusion between the two races.

Calandrella raytal adamsi (Hume). (6 skins.)

An abundant and resident species, but confined to the riverain area, where it breeds about the stretches of dry sand and tamarisk scrub. In winter the Sand-Lark gathers into flocks, which often join forces with *C. b. longipennis*. The males are in song as early as January and February.

Calandrella brachydactyla longipennis (Eversm.). (12 skins.)

The Short-toed Lark is an abundant winter visitor to the district, occuring in large flocks in the riverain and semi-desert areas, and to a certain extent also visiting cultivation. In both years it was numerous as early as September, and in 1919 the first flock was met with as early as 14 August. It remains common until the end of March, and a few birds stay over into April.

During the winter of 1919–1920 its numbers were much smaller than usual.

Ammomanes deserti phœnicuroides (Blyth). (5 skins).

A resident species, locally distributed in small numbers throughout the district. It is most abundant about the base of the small rocky hills which rise abruptly from the plain between Chiniot and Lalian. Elsewhere it is chiefly found on the curious patches of hard clayey soil, divided into miniature ravines by the action of rain-water, which occur throughout the district.

Several nests were found, mostly old, all of the same character: namely, a substantial cup of twigs, grasses, etc., with a lining of finer materials, placed in a hollow on the side of one of the minute ravines mentioned above and surrounded by a banking of small pieces of hard clay—broken flakes from the sunburnt ground. One nest was in a hollow amongst the bricks of the wall of a ruined hut, 2 feet from the ground; another was on a ledge of a rocky hillside some 5 feet up.

A nest containing one egg and two newly-hatched young was found on 28 April, 1918, and these young birds flew out when I looked at it again on 18 May. C/3 slightly incubated eggs were taken on 8 June from a nest which I found partly built on 2 May: this nest was apparently deserted in the meantime owing to damage done by rain, and afterwards readopted and completed.

This Lark is not at all shy, and when in the neighbourhood of its nest allows a close approach, while it runs freely and wanders about in an erratic manner which gives no clue to the actual site. The note is a curious plaintive, dreamily uttered "peef-peef-peef"; the song uttered during a hesitating mounting flight with deeply flapping wings is a broken collection of disconnected notes: "peef-poop-peef-peef-poof" is a rough attempt to reduce it to syllables.

An unfledged bird was obtained, and it shows that the juvenile plumage is exactly similar to that of the adult, except that the feathers on the upper surface are edged with a more creamy yellowish-buff.

Ammomanes phœnicura phœnicura (Frankl.). (4 skins.)

Four adult males, all deep in complete moult, were shot on 27 July, 1919, from a small flock on waste ground near the canal at Sheikhan. They were not at all shy, flying with a curious uncertain twisting flight when disturbed and soon settling again. So far as I can ascertain, this is the only record for the Punjab above Hissar, where the species occurs in small numbers.

Galerida cristata magna Hume. (1 skin.)

I obtained one at Shah Jiwani on 15 February, 1918 ; it is probably not uncommon in some years as a winter visitor.

Galerida cristata chendoola (Frankl.). (7 skins.)

An abundant resident and generally distributed. It commences to sing about February, and the song is uttered on the ground, from a bush, and whilst soaring in the air. I took six nests in 1919 between 27 March and 15 May. Sixteen eggs yield the following measurements :—Length 20·5–23 mm., breadth 15·5–17·5 mm. ; average 21·8 × 16 mm.

Alauda arvensis dulcivox Brooks. (8 skins.)

A common winter visitor from early in December until about the end of February.

Alauda gulgula gulgula Frankl. (5 skins.)

The Indian Sky-Lark undoubtedly breeds in some numbers in the fields of the riverain area about April and May, and it stays in their neighbourhood until October and possibly November. It is apparently a summer visitor only, and outside the riverain it is somewhat scarce.

Mirafra cantillans Jerd. (1 skin.)

On 23 July, 1919, I first met with this species in the district at Shah Jiwana, where a few were frequenting a cultivated area in which patches of cotton and a kind of runner bean alternated with patches of waste ground. These birds were obviously breeding and the males were in song,

singing on the ground. Next day one was seen at Shadi Sheikhan, and another was disturbed from a cotton-field at Mochiwala on 15 August. It is probably only a summer visitor to the district.

Pyrrhulauda frontalis affinis Blyth. (1 skin.)

A female was obtained by Ticehurst near Pabbarwala on 23 December, 1917.

Pyrrhulauda grisea (Scop.). (5 skins.)

This Finch-Lark is found in numbers throughout the riverain and the neighbouring areas on both sides of the River Chenab from March until September, and breeds there. I found a nest with one egg in a cotton-field on 28 July. Probably the majority of these birds are summer visitors as, with the exception of an occasional flock noticed about Chund bridge, I have not met with it in winter.

The male is in song from March until August: the song is uttered both on the ground and in the air, in the latter case while the bird is rising and falling in a series of deep stoops, keeping round about over the same patch of ground; reaching its highest pitch it closes its wings and falls steeply, to recover and mount again while still some height above the ground. Near the end of its fall, if the observer is close at hand, a whirr can be heard, due to the pressure of the air in the wing-feathers. The song is a monotonous but sweet trill, "trrreecee," without variation.

Anthus campestris (L.). (9 skins.)

The Tawny Pipit first arrives in the district during the last week in August, and although I am of opinion that many of the birds seen in that month and in September are merely passage migrants and move on farther south by the beginning of October, the species remains in fair numbers throughout the winter until the end of March, and a few are to be seen during the first fortnight of April. There was some sign of a return passage commencing about the end of February.

I have measured a series of 15 males and 9 females, and have compared the results with the measurements of this species, as given in the 'Practical Hand-book' and Hartert's 'Palæarctic Fauna.' As a result, I would lay down the measurements of the Tawny Pipit as follows :—

	Bill from skull.	Wing.	Tail.	Tarsus.
♂ ..	15–18·5 mm.	(85·5) 87–98	(64·5) 67–76	25–29
♀ ..	16–17·5 „	82–85·5	(60) 64·5–69	23·5–25

It may here be remarked that I do not believe in the validity of the supposed smaller race, *Anthus c. minor* (R. Blas.), from N.W. India.

Anthus sordidus decaptus Meinertzhagen. (3 skins.)

This Pipit would appear to be only a straggler on the spring and autumn passage. It was observed as follows :—

1918. 12 March : ♂, Mochiwala (No. 2152) ; 11 October : ♀, Jhang (No. 2334).
1919. 2 March : one seen at Jhang; 10 August : ♂, Bhowana (No. 2746).
1920. 15 March : one seen at Jhang.

All the above birds were either in or near growing crops : one was seen to perch on bushes.

I have compared the three specimens obtained with the type of *A. s. captus* at Tring, as well as with a series of that race and of *A. s. jerdoni*. The type of the former race came from Palestine, and while it is easy to distinguish a series of Palestine birds from the Himalayan race *A. s. jerdoni*, birds from the Persian and Baluchistan areas are intermediate in coloration, although nearest to the Palestine birds. These three specimens are of this intermediate form to which Meinertzhagen has given the name *decaptus* (Bull. B.O.C. xli. 1920, p. 23).

My birds measure respectively :—

	Bill from skull.	Wing.	Tail.	Tarsus.
♂♂....	20·5, 21 mm.	97, 104·5	83, 90·5	27·5, 29·5
♀.....	19 „	97·5	89·5	29

Anthus trivialis trivialis (L.). (5 skins.)

The Tree-Pipit passes through Jhang in some numbers as a passage migrant in spring and autumn.

On the spring migration they appear in March (first dates: 20 March, 1918; 30 March, 1919; 9 March, 1920) and remain on until April, none being seen later than the middle of the month.

On the autumn migration they appear early in September and remain until about the second week in October.

In the somewhat abnormal winter of 1917 a few Tree-Pipits were observed about Massan on 19–21 December, but with the exception of one or two doubtful records, I have no other evidence that the species normally remains in the district during the winter.

Anthus roseatus Blyth. (9 skins.)

Hodgson's Water-Pipit is a common winter visitor to the district, being found in the neighbourhood of jheels wherever Sarpat grass, bushes, or reed-beds supply cover about the edge of the water. I failed to make accurate observations regarding its arrival and departure, but the earliest date on which the species was identified was 7 December, and a bird well on in the spring moult was obtained on 26 March. Nurpur escape, the jheels about Massan, and Chund bridge are favourite localities for the species. This Pipit collects to roost in reed-beds.

Anthus spinoletta blakistoni Swinh. (8 skins.)

The Water-Pipit is found in Jhang District in abundance as a winter visitor during the months of December and January and the first half of February. These birds arrive as early as the middle of November, and they appear to have left by the beginning of March.

The Water-Pipit is by no means restricted to jheels in its choice of terrain; it is found in considerable numbers about cultivation, such as roots, mustard, and growing wheat. They are very restless and at times hard to approach closely, so that the securing of desired stages of plumage is a matter of difficulty.

Anthus spinoletta japonicus Temm. & Schleg.

A male in first winter plumage was shot on 7 December, 1919, at Massan, where it was found in a small jheel much frequented by *Anthus rosaceus*. This bird is probably a not infrequent winter visitor overlooked amongst the numbers of other Pipits, as it will be remembered that Brooks obtained two in the neighbouring district of Multan (S. F. viii. p. 486).

Anthus rufulus rufulus Vieill.

My observations on the Common Indian Pipit are exceedingly unsatisfactory, owing to the difficulty of separating this bird in the field from *A. campestris*; for some time also I found considerable difficulty in separating the two birds in the cabinet, as the only fully satisfactory means of discrimination is one of measurement. The 'Fauna of B. India' supplies very unsatisfactory material as regards measurements, and while Hartert's 'Palæarctic Fauna' and the 'Practical Hand-book' give measurements for *A. campestris*, I could not find similar data for *A. rufulus*. It was therefore necessary to work out the differences for myself in England, and the data thus obtained enabled me to separate my series of both species correctly. I then found that several skins tentatively identified in India as *A. rufulus* were really *A. campestris*, with the result that the majority of my field notes regarding the appearance and dates of the two species became valueless: hence the status of *Anthus rufulus* in Jhang District remains uncertain. It is probably a summer visitor only, as is the case with so many Indian forms in the extreme north-west of the Indian Peninsula. At any rate, the bird breeds in considerable numbers all along the riverain area of the Chenab, and presumably also the Jhelum, being paired as early as March and continuing on the breeding-ground as late at least as the end of July.

The relative lengths of the tertiaries in relation to the primaries is no distinguishing feature as between *A. rufulus* and *A. campestris*. It is variable in both species.

Reliably sexed birds may, however, always be separated on measurements, as may be seen from a comparison of the

table below with the table given for *A. campestris*. No specimens of *A. rufulus* were preserved from Jhang, but 9 males and 3 females from other localities which I have measured give the following results :—

	Bill from skull.	Wing.	Tail.	Tarsus.
♂.....	15·5–16·5 mm.	81–85	58–63·5	23–27
♀.....	15·5 „	76·5–79·5	54·5–58	25·5–26

Motacilla flava beema Sykes. (6 skins.)

Sykes's Yellow Wagtail was by far the most abundant of the Wagtails in both the spring (March) and autumn migrations (September). The total number of individuals passing along the course of the Chenab River at these seasons must be incredibly large.

Note.—The difficulty of identifying Wagtails in the field in their various stages, and the vast numbers of these birds that winter in, or migrate through the district, have made it quite impossible for me to keep accurate notes as to the occurrence of the different species ; for one bird shot or otherwise identified, hundreds were seen flying overhead or in the distance. Thousands might be feeding in the riverain pastures, while none were to be seen a mile or two away where I was out collecting. The most detailed observation, such as was not possible to me, would be required before any accurate attempt could be made to give more detailed notes of the different races than I have attempted.

Motacilla flava borealis Sund. (4 skins.)

This race of the Yellow Wagtail occurs on both spring (end of March) and autumn passages (September), but it is probably less abundant at the latter time. Two were seen on 28 January, 1918, with a flock of *M. alba*. Three specimens were preserved, in addition to a fourth doubtfully attributed to this form.

Motacilla flava melanogrisea (Homeyer). (5 skins.)

The Black-headed Wagtail passes through the district in some numbers on both the spring passage (March) and the autumn passage (end of August to beginning of October).

A few immature birds, apparently of this race, were seen in December every year.

Motacilla citreola citreola Pall. (11 skins.)

The Yellow-headed Wagtail is to be found about the district jheels as a winter visitor in varying numbers from November to March. Towards the end of the latter month its numbers are greatly swollen by passage migrants, but these soon pass on out of the district, and I have no record later than 6 April, 1919. The return passage takes place in the second half of August, but their numbers then are apparently smaller than in the spring. Two Wagtails seen at Nurpur jheel on 27 July, 1919, were almost certainly of this species.

Motacilla citreola calcarata (Hodgs.). (2 skins.)

Two specimens only of Hodgson's Yellow-headed Wagtail were procured : namely, a male at Massan on 29 March, 1919, and a female in the same neighbourhood on 7 December of the same year. Others were doubtless overlooked amongst the numbers of the typical race.

Motacilla alba alba L. (5 skins.)

Motacilla alba personata Gould. (9 skins.)

These two races of White Wagtail may be treated of together, as they are to be met with almost invariably in company, and appear to show no difference in habits, choice of locality, and time of arrival and departure. *M. a. personata* is, however, most markedly the less abundant. They commence to arrive about September (earliest date for *M. alba alba*, 17 September, 1919, and 18 September, 1918 ; for *M. a. personata*, 31 August, 1919, and 25 September, 1918), but are most distinctly in a majority, while the great autumn rush of the other species of Wagtail is at its height and does not reach its full numbers until October and November ; they then remain generally distributed, and are the commonest Wagtails in the district until about the end of March. A few are to be seen during April, and I noted a solitary

example of *M. a. alba* as late as 5 May, 1919. Nine examples of *M. a. personata* and five examples of *M. a. alba* were preserved. One of these latter (No. 2585, ♀, 1. iv. 1919) might possibly be identified as an example of *M. a. dukhunensis*, which race may be expected to occur in the district. But I am of the opinion that here as elsewhere in the Punjab practically all the White Wagtails belong to the typical race.

Cinnyris asiatica brevirostris (Blanf.). (5 skins.)

The Purple Sunbird is a most abundant summer visitor, arriving at the beginning of March and reaching its full numbers by the middle of the month. Pairing and nidification commence immediately, and eggs may be found in April and May. It remains until the end of September, and the latest date on which I have seen it was 9 October, 1918.

In the five males collected the length of bill from skull varies between 18–19 mm. and the length of bill from the feathers of the forehead between 15–16·5 mm. This is, perhaps, a trifle longer than in birds from Sind, but I prefer to attribute these migratory birds to *A. a. brevirostris* rather than to *A. a. asiatica*, which is apparently a resident bird in the area where it is found.

Zosterops palpebrosa palpebrosa Temm. (1 skin.)

The White-eye appears in flocks as a winter visitor, and remains common from November until late in March. In 1918 a party was observed as early as 17 October. It is possible that a few pairs remain to breed in the district, as I have found nests in the district of Jhelum, and the species also breeds freely at Lahore.

Certhia himalayana tæniura Severtz. (9 skins.)

The Tree-Creeper is a common winter visitor to the district from November (first dates 28 November, 1917, and 16 November, 1918) until well into March. It was last seen on 13 March, in both 1919 and 1920. These birds are most noticably greyer above and paler below than specimens collected at Simla, which are of a warmer, more rufous, tint.

Parus major caschmirensis Hartert. (15 skins.)

This race of the Great Tit is a common and generally distributed winter visitor to the district: it was, however, more abundant during the winter of 1918–1919 than during the other two winters of my stay. It arrives early in November (earliest dates 4 November, 1917, and 6 November, 1918), but appears to be more irregular in its date of departure.

In 1918 only three individuals were seen in March, two on the 11th and one on the 13th. In 1919 it remained common throughout that month and was last noted on the 30th. In 1920, however, it was last observed on 15 February. A series of 15 specimens was collected within the district, and they are indistinguishable from a series of birds collected in Srinagar.

Lanius excubitor lahtora (Sykes). (1 skin.)

A common and resident species, generally distributed throughout the district. Breeds in March and April.

Lanius vittatus Valenc. (1 skin.)

The status of the Bay-backed Shrike in Jhang District is hard to define. Throughout the greater part of my stay in the district it was observed in small numbers, an occasional bird here and there throughout the area, but never so commonly as in the central Punjab. It was apparently resident, but no nests were found. Then in 1919, from the middle of July to the middle of September, I found it very common in those canal areas that lie along the Lyallpur border, both adults and immature birds being observed; but I was unable to satisfy myself whether these birds were part of the resident population or merely passage migrants as I suspected, for in the northern Punjab the species is for the most part a summer visitor only.

Lanius cristatus isabellinus Hemp. & Ehr. (3 skins.)

A fairly common winter visitor, but varying somewhat in its numbers. It was first observed on 10 November in both 1917 and 1918. The majority appear to leave by the middle

week in February, but in 1918 single birds were observed on 13, 19, and 21 March.

In 1918 and 1919 a few Red-tailed Shrikes were seen in September on passage, and at the time attributed to this race; but as the only specimen then obtained has since proved to be *L. c. phœnicuroides*, it is possible that all those migrants were of that race and not *L. c. isabellinus*.

Lanius cristatus phœnicuroides (Schalow). (1 skin.)

A female obtained by me on 1 September, 1919, at Jhang appears to be the first record for this race of Red-tailed Shrike in the Punjab. The identification was verified by comparison with specimens at the British Museum. As this bird was one of several Red-tailed Shrikes seen on passage in 1918 and 1919, it is possible that *L. c. phœnicuroides* is a regular autumn migrant through the district.

Lanius schach erythronotus (Vig.). (2 skins.)

Here, as elsewhere in my experience, the appearance of the Rufous-backed Shrike is somewhat erratic. As a winter visitor it is to be met with in small but varying numbers from November to February. On the spring migration I have two records (5 April, 1918, and 6 May, 1919) of what were clearly migrating birds from their sudden appearance in an area which I was working almost daily. In 1919 a few odd birds were observed on the return passage between 1 August and 19 September.

Tephrodornis pondicerianus pallidus C. B. Ticehurst. (1 skin.)

Only observed as follows :—

25 December, 1919: one on a canal-bank and a small party in "Jhant" jungle on the edge of Sang jheel beyond Dab Kalan (and actually a mile or two over the border into Multan District). 2 and 3 February 1919 : one about with a party of Minivets at Mochiwala. 9 September, 1919 : two or three at Asabha (*vide* Bull. B. O. C. xli. 1920, p. 56).

Pycnonotus leucotis leucotis (Gould). (7 skins.)

This is the common Bulbul of the district, generally distributed but most abundant in the canal areas. Its status is

rather puzzling: some birds certainly are resident, yet from about March to September a large number either leave the district or change their habitat within it, for during the breeding-season the species appears very much less common; for instance, in the Civil lines during the winter months both *P. hæmorrhous* and *P. leucotis* are found, with the latter more numerous, yet during the summer the latter all disappear.

Pycnonotus hæmorrhous pallidus Baker. (4 skins.)

The Red-vented Bulbul is generally distributed throughout the district as a resident in small numbers. It is, however, less common than the last species. On 20 August, 1919, at Chund bridge I saw but failed to secure what was evidently a hybrid bird, with the red vent of this species and the very distinct dirty-white ear-patches of *P. leucotis*. Eggs are laid in May.

Pericrocotus brevirostris brevirostris (Vig.). (5 skins.)

A common winter visitor in flocks from December to the end of February. Parties were seen as early as 4 November, 1917, and 18 November, 1918, and as late as 12 March, 1918, and 20 and 29 March, 1919.

Pericrocotus peregrinus (L.). (2 skins.)

Two small parties of 4 or 5 individuals were seen—one in cultivation near Ahmadpur on 1 January, 1919, the other in a "Budh" of stunted tree-jungle near Winoka on 1 August, 1919. Two specimens were obtained on the first occasion.

Tchitrea paradisi (L.). (2 skins.)

A spring and autumn passage migrant in small numbers; observed on different dates between 7 and 28 April and 7 and 21 September.

Leucocirca aureola Vieill.

The Fantail Flycatcher is distributed in small numbers throughout the district, and is resident. It is remarkably bold in demeanour; one flew down and took a fly off the shoulder of my Sais as he was standing talking to me.

Muscicapa striata neumanni Poche. (1 skin.)

Observed on the autumn migration as follows :—

20 September, 1918 : one shot at Wariam ; 31 August, 1919 : one seen at Jhang city station ; 10 September, 1919 : two on the railway telegraph wire near Wariam. As in the case of *Agrobates g. familiaris*, these birds represented the outer fringe of a rush of migration through Sind about the same period, as observed by Dr. C. B. Ticehurst, who was then stationed at Karachi. There is only one previous record for the Punjab : namely, the male obtained by me on 10 September, 1913, at Sardi in the Salt Range (Ibis, 1916, p. 59).

Siphia parva parva (Bechst.). (6 skins.)

The Red-breasted Flycatcher is an abundant passage migrant through the district in both spring and autumn. The spring passage starts early in March and continues in force until about the middle of April, the latest record being for 26 April, 1919.

In autumn it arrives about the middle of September, the earliest record being on the 9th (1919), but passes on again between the middle of October and the middle of November. A comparatively small number remain in the district throughout the winter. On the spring passage the males are somewhat pugnacious.

Culicicapa zeylonensis (Swains.). (1 skin.)

A winter straggler only. One was procured from a mixed hunting-party of Tits, White-eyes and Willow-Wrens in a large garden at Dab Kalan on 24 December, 1918. One, or possibly two, was frequenting the rest-house garden at Shah Jiwana when I was there on 18 and 19 January, 1920.

Phylloscopus collybita tristis Blyth. (10 skins.)

The Siberian Chiffchaff arrives in the district towards the end of September or beginning of October and remains throughout the winter until March, during which month a marked increase is noted with the arrival of the spring passage migrants. These appear, however, to pass on rapidly,

but a few birds are to be observed throughout April. Its numbers, however, vary a good deal in different years: during the winter of 1917–1918 the species was most common; it was less so during the winter of 1918–1919, while in the winter of 1919–1920 it was distinctly scarce until a number came in with a cold snap early in February.

The loud "Chiffchaff" song is uttered freely by the passage migrants in March, and I have heard it also on one occasion in autumn on 10 October.

Phylloscopus neglectus neglectus Hume. (16 skins.)

During the winter of 1917–1918 I probably overlooked this species, as the only record is of a specimen obtained by Ticehurst at Kadirpur on 27 December.

Next winter, 1918–1919, I found it common in a Kikur grove at Kadirpur from 13 to 17 November when I was on tour at that place. A single female was shot in some bushes beside the railway line at Jhang on 21 March. In 1920 I shot a male, in the same place as the last specimen, on 13 January, and another male in my garden in some undergrowth on 15 January. Then in the course of a tour on the right bank of the Chenab, from Shah Jiwana to Kadirpur via Kot Sultan and Kariwala, I found the species very common between 1 and 28 January. Nearly all were seen in Kikurs on the canal-banks, often several in company. It is worth remarking that during this same tour I found *Phœnicurus erythronotus* unusually common on the same ground, where it had not been met in other winters; so it is possible that this was also an unusual irruption of these Warblers. The call-note is very distinctive; it is a harsh, rather grating single note, "chit," not unlike that of a Whitethroat and very different to the call of most other members of the genus. It is, of course, a winter visitor only.

Phylloscopus nitidus nitidus Blyth. (8 skins.)

A spring and autumn passage migrant in fair numbers. On the spring migration it first arrives in the latter half of March, and may be met with throughout April (latest date

27 April, 1919). On the autumn passage it occurs from the end of August until October (earliest and latest dates 25 August, 1919, and 18 October, 1918).

Phylloscopus humei humei (Brooks). (2 skins.)

A winter visitor in small numbers, occurring certainly in December and January, if not for a longer period. I was unable to make detailed notes of the occurrence of this species, owing to the difficulty of identifying it amongst the numbers of *P. subviridis*. The call-notes of both birds are very similar, but may be differentiated by the fact that *humei* utters the call "twee-ut" in two syllables and more loudly than *subviridis*, which slurs it into a single syllable.

Phylloscopus subviridis (Brooks). (12 skins.)

A very abundant winter visitor, arriving in the second half of September in small numbers and reaching its full numbers about the beginning of November. It remains common till the end of February and leaves in the middle of March. The call-note has been described under the last species. Before leaving in March the birds start their song, which is very shrill and weak, and can only be heard at a near distance; it consists of a succession of single notes followed by a reel, thus: "wet wet wet weet whir-r-r-r-r-r."

Phylloscopus indicus (Jerd.). (4 skins.)

A spring passage migrant, passing through in small numbers in March and April. The earliest dates on which it was observed were 23 March, 1918; 13 March, 1919; 15 March, 1920; the latest dates were 10 April, 1918; 21 April, 1919. The bird is inclined to skulk in undergrowth, and has much the same demeanour and habits as the Accentors: the note is a sharp "quit."

Lusciniola melanopogon mimica Madar. (5 skins.)

This arrant skulker is found in considerable numbers in December, January, and February in the dense reed-beds of the Nurpur escape and in proportionate numbers in the reedy channels which meander on the plain near Massan.

I have also found a few in a small reed-bordered jheel at Pabbarwala. It is presumably a winter visitor only, but I saw two at Massan as late as 26 March, 1919. The ordinary call-note is a sharp "chuck," similar to the noise made in cocking a gun ; the pleasing song is to be heard early in February.

Acrocephalus stentoreus brunnescens (Jerd.). (4 skins.)
Observed on the spring migrations as follows :—

1918 : one on 9 May and one on 14 May.
1919 : two on 6 May and one on 28 May.

All the birds were found in the thick overgrown hedges of my compound, and four of them were procured. A bird seen at Chund on 19 August, 1919, was almost certainly of this species.

Acrocephalus dumetorum Blyth. (5 skins.)
Blyth's Reed-Warbler passed through Jhang in some numbers on the spring passages of 1918 and 1919. In 1918 it was first noticed on 7 April and continued common until the middle of May, being last seen on the 16th. In 1919 it was first heard on 11 April and continued fairly common until 23 May ; a single bird was seen as late as 7 June. These spring migrants sing freely in the hedges. On the autumn passage it was only observed in 1919, when a few birds passed through in August.

Hypolais rama (Sykes). (5 skins.)

Hypolais caligata (Licht.). (8 skins.)
Both these small Tree-Warblers occur in the district in some numbers on the spring and autumn passages. They are very difficult to distinguish in the field, so I was not able to make any accurate notes as regards the dates of either species separately. But although they do not appear to mingle with each other, each species being in patches, so far as I could ascertain, both probably arrive and disappear about the same time. At any rate, on the spring passage Tree-Warblers arrive occasionally as early as the end of March, but more

usually in the early part of May. They return towards the end of July and are abundant in August and September.

Mr. B. H. Bird, I.C.S., kindly sent me a clutch of 4 eggs of *H. rama* with the nest and skin of the parent bird, which he took at Chak Lerwa on the Indus on 14 April, 1918, in the neighbouring district of Mianwali. From his account it appears that the species breeds fairly commonly in that neighbourhood in April.

According to Major Lindsay Smith (Jour. Bombay N. H. Soc. xxiii. p. 366), *H. rama* also breeds commonly in the riverain jungles of the Chenab at Multan, just below Jhang; he does not specify the month, but states that, after breeding, the birds appear in May for a short time in cantonments and then disappear; from which I assume that there, as at Mianwali, the breeding month is April.

From these two records it is highly probable that *H. rama* also breeds in the riverain of Jhang District, but I have no record to that effect. In any case, the situation as regards its breeding and migration appears somewhat puzzling at present. It is possible that the migrant and breeding birds are not the same individuals.

Sylvia hortensis crassirostris Cretzsch. (5 skins.)

The occurrence of the Eastern Orphean Warbler was somewhat irregular in the two and a half years that I was at Jhang, and was doubtless dependent on climatic conditions.

In the first winter (1917–1918), following the abnormally heavy rains, it was comparatively abundant: that is to say, I observed fourteen individuals in the period between 4 November and 28 March, some occurring each month. The rains of 1918 were a practical failure, and no Orphean Warbler was observed that winter, although a single passage bird was seen at Kandiwal on 14 August. The species was next observed on the autumn passage of 1919, when some ten or eleven individuals were observed between 11 August and 10 September. A single bird seen at Mochiwala on 26 and 27 December and another at Kadirpur on 25 January complete the total for the cold weather of 1919–1920.

The above records would indicate that the species is a regular autumn passage migrant as well as an irregular winter visitor.

This bird is most partial to Kikur-trees, and was for the most part met with climbing about in their branches after the manner of Whitethroats; but a few were observed in the thorny tangles of large bushes of the wild Caper.

Sylvia communis icterops Ménétr. (5 skins.)

The Eastern Whitethroat was only observed on the autumn passage of 1919, when six individuals in all were met with. Two were found at Mochiwala on 17 August and another in the same locality next day. Single birds were found at Wariam on 10 and 14 September and another in the Shorkot direction on 18 September. All were found hopping about the boughs of Kikur-trees in the neighbourhood of canals.

Sylvia curruca affinis Blyth. (8 skins.)

The Eastern Lesser Whitethroat arrives early in September (earliest date 4 September) and becomes common about the middle of the month. The majority of these birds seem to pass on farther into the plains, but the species remains fairly common from October until the end of February. A certain number are to be met with in March and April, and fresh birds arrive with the spring passage and are passing through early in May; the latest date on which one was seen was 10 May, 1919.

Sylvia curruca minula Hume. (11 skins.)

This race of Lesser Whitethroat is a common winter visitor to the district and is found in all portions of it, often in the same tree with *S. c. affinis*, although it has a somewhat more marked partiality for the more barren and open stretches of country.

The majority arrive early in September, the species being common about the middle of the month, but I suspect that most of these earlier arrivals pass on farther into the plains. From November to the end of February the bird is common,

but its numbers appear to vary in different years. March sees the departure of the majority, but I have seen a few during the first week of April.

[**Sylvia althæa** Hume.

Although the bird was not obtained, I have little hesitation in attributing to this species a Whitethroat which was seen by me near Muradwala on 13 August, 1919. Unfortunately at the time I was riding in company with a number of local notables, and was therefore unable to use my gun.]

Sylvia nana nana (Hemp. & Ehr.). (13 skins.)

I had previously only met with the Desert-Warbler in the Sirsa subdivision of Hissar District (as recorded in the Journal of Bombay Nat. Hist. Soc. xxiv. 1915, p. 190), so it was a welcome surprise to find it a very common winter visitor to Jhang District. While the majority probably do not arrive until towards the end of October, I have shot a specimen as early as 25 September, 1918. They leave again about March, and the latest dates for 1918 and 1919 were 24 and 26 March respectively.

The Desert-Warbler may be looked for throughout the district, from Chiniot to Shorkot (although I have not actually seen it west of the Jhelum), wherever patches of semi-desert plain occur; here it lives in the small Karil-bushes which dot the ground, creeping in and out of their thorny fastnesses, perching on their topmost twigs, and running about the sand at their bases. Usually shy and retiring, at times it is bold and allows a near approach; as, for instance, when I walked up within a couple of yards of one as it sat on a twig, bowing and eyeing me with interest. It has a curious habit of following other birds, such as Wheatears, from bush to bush, and this would appear to be from sociability rather than pugnacity.

Acrobates galactotes familiaris (Ménétr.). (2 skins.)

Two specimens were obtained on the autumn migration in the south of the district, namely at Haveli Bahadur Shah

on 24 September, 1918, and near Wariam on 10 September, 1919. The species appears in September in small numbers as a regular autumn migrant in Sind, so it is clear that the fringe of the route just reaches this portion of the Punjab.

Prinia inornata inornata Sykes. (1 skin.)

This Wren-Warbler is a common resident, and is generally distributed throughout the district on all types of ground. Breeds in July and August.

Prinia gracilis lepida Blyth. (3 skins.)

A very common and widely-distributed resident, found not only in the grass jungles of the riverain, but also on the saltpetre impregnated plains with small thorn bushes and desert plants about Massan, Shorkot, and similar areas. Of the species of *Prinia*, it is least often found in cultivation. It breeds from March to July.

Prinia socialis Sykes. (2 skins.)

A resident, but the least common of the three species of *Prinia* found in the district; observed here and there in the Chiniot and Jhang tehsils, but not, so far as my notes serve, on the Shorkot side. A few lived about my garden throughout the year.

Franklinia buchanani (Blyth). (4 skins.)

A resident, and common throughout the district wherever suitable patches of waste ground occur. It is, however, certainly less abundant than in the semi-desert plains of south-eastern Punjab. Breeds from April to August.

Cisticola cisticola cursitans (Frankl.).

The Fantail Warbler was found to be common and apparently breeding in the "Pampas grass" and reeds of the Nurpur escape late in July 1919. Otherwise it was only observed at Kadirpur on 13 February, 1918, when one or two were found in the rushy margin of a small half-dry jheel.

Laticilla burnesi (Blyth). (2 skins.)

This Grass-Warbler is fairly common about the thick cover of the Nurpur escape. It was also observed in small numbers about the Massan jheels and in "Pampas grass" in the river-bed of the Chenab at Dab Kalan. A single example was seen at the small canal outlet at Asabha. The majority of the birds were observed in the winter months, but as the Asabha bird was seen on 9 September and a pair were noticed at Nurpur on 25 July, I presume that the species is resident in the district. It has a loud and pleasant song, similar to that of *Saxicola caprata*.

Orthotomus sutorius sutorius (Forst.). (4 skins.)

A resident, and generally distributed in small numbers throughout the district wherever small gardens and cultivation produce conditions suitable to its habits. Breeds in April and May.

Pyctorhis sinensis (Gmel.). (1 skin.)

Only observed on the bank of the Chenab at Dab Kalan, south of Shorkot, when one of a pair was shot in a patch of thick "Pampas grass" on 26 December, 1918.

Argya caudata caudata (Dum.). (10 skins.)

Resident, common, and generally distributed, but most partial to those areas where dry, bare plain studded with wild Caper bushes borders on cultivation. Nests may be found from March until April. It is not, however, so abundant as in the wide semi-desert areas of the south-eastern Punjab about Hissar.

Crateropus terricolor sindianus Ticehurst. (10 skins.)

A resident, and generally distributed but less abundant than the last species. Nests were found in May.

Turdus viscivorus subsp. ?

A single Missel-Thrush was seen and heard on the canal-bank near Kot Sultan on 22 January, 1920.

Turdus ruficollis atrogularis Temm. (4 skins.)

A common winter visitor, but rather variable in numbers and times of appearance. It is particularly partial to canal-banks.

During the winter of 1917–1918 I only saw five individuals on various dates between the 1st and 23rd of February.

In the winter of 1918–1919 the first individual was seen on 9 November, and occasional birds were noticed about until the middle of January, when there was a marked increase which continued until the end of February; occasional birds were noted until the end of March.

In the winter of 1919–1920 it was not seen until 19 December, a few odd birds only putting in their appearance that month. Throughout January and February it was not uncommon, and five individuals were seen on the last day of the latter month in different places, after which it was not observed.

Myiophoneus temminckii temminckii Vig. (1 skin.)

A Whistling Thrush was shot in the rest-house garden at Shadi Sheikhan on 20 January, 1920.

Monticola solitarius pandoo (Sykes). (2 skins.)

A spring passage migrant observed as follows:—1918, two on 5 April; 1919, two on 18 April and one on 24 April. On migration through the Punjab plains it is usually observed about deserted brick-kilns, which are the nearest substitute for rocky ground!

Œnanthe deserti albifrons (Brandt). (12 skins.)

The Desert-Wheatear is a common and generally distributed winter visitor, being particularly abundant on the wide, barren plains. It is the latest of the genus to arrive, only an occasional individual appearing before October. It leaves early in March and all are gone by the end of the month. The low, sweet song is occasionally heard during the winter months.

Œnanthe leucomela leucomela (Pall.). (1 skin.)

On 9 April, 1918, I secured the first specimen of the

Siberian Wheatear, recorded for the Punjab, on the rough ground which lies to the north-east of Hirs Tomb, just outside Jhang. It was a male in winter plumage with no sign of moult. There was a little fat on the body and the testes were very slightly enlarged. No others were seen.

Œnanthe picata (Blyth). (13 skins.)

Œnanthe capistrata (Gould). (27 skins.)

At present I prefer to keep these two Wheatears separate, as I am by no means satisfied that they are merely two forms of one dimorphic species. The evidence has been discussed elsewhere.

Jhang falls within the area where both species or forms occur together with the same status. As I have for some time past been collecting evidence as regards these two birds, I took the trouble to keep a careful record of all the birds seen. The result is given in the following tables :—

Winter 1917–1918.

	July	Aug.	Sept.	Oct.*	Nov.	Dec.	Jan.	Feb.	Mar.		
picata ♂ ...	...	...	...	10	12	8	12	11	9	62	63
,, ♀ ...	...	...	...	...	...	...	...	...	1	1	
capistrata ♂	...	...	...	1	13	25	28	22	...	89	110
,, ♀	...	...	...	...	2	8	5	4	2	21	

* Joined district on 23rd October.

Winter 1918–1919.

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.		
picata ♂ ...	...	1	19	10	5	12	12	5	2	66	74
,, ♀ ...	...	...	...	...	1	5	1	...	1	8	
capistrata ♂	...	...	12	3	11	27	4	18	3	78	92
,, ♀	...	...	2	...	2	4	...	5	1	14	

Winter 1919–1920.

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.		
picata ♂ ...	...	13	10	*1		18	14	6	1	63	68
,, ♀ ...	...	...	1	...	On	2	...	2	...	5	
capistrata ♂	...	28	14	2	leave	31	19	16	2	112	138
,, ♀	1	2	4	1		8	9	...	1	26	

* Observations interrupted by illness.

It is not always easy to separate the females in the field, so the relative numbers of the two forms of female can only be regarded as approximate. The great majority were, however, as is indicated by the figures above, of the pale *Œ. capistrata* type. It will be noticed that there is great disparity amongst the numbers of the sexes, and this I noticed in all the species of Wheatear with the exception of *Œ. deserti albifrons*. During the entire period of my stay 191 males of *Œ. picata* were seen, as against 279 males of *Œ. capistrata* and 72 females of both forms combined. It is remarkable also that although there was great variation in the colour of the crown in the males of *Œ. capistrata*, only two or three males of the intermediate type were seen.

The earliest dates for males of the two forms were as follows :—

Œ. picata. 16 August, 1918 ; 2 August, 1919.
Œ. capistrata. 8 September, 1918 ; 2 August, 1919.

The latest dates on which they were seen were :—

Œ. picata. 12 March, 1918 ; 22 March, 1919; 1 March, 1920.
Œ. capistrata. 26 February, 1918 ; 4 March, 1919 ; 1 March, 1920.

Both forms were found generally distributed on waste ground and in cultivation alike.

Œnanthe isabellina (Cretzsch.). (6 skins.)

Hume always wrote of this Wheatear as if it was one of the most common of the genus occurring in the Punjab, yet in my experience it is much less abundant than most of the other species. Indeed, it is usually somewhat scarce. If any change has occurred in its status since Hume's day, the explanation doubtless lies in the enormous area which has been transformed by the canal systems from desert plain to fertile cultivation. In Jhang District it is a winter visitor in small numbers, and was met with on different dates between 4 August and 1 March.

Œnanthe xanthoprymna chrysopygia (De Fil.). (10 skins.)

A fairly common winter visitor, but more strictly confined than the other Wheatears to the wide plains of semi-desert character. It also affects the small hills about Yakuwala. First observed in 1918 on 1 October, and in 1919 on 19 September.

Last observed on 25 March in 1918, on 22 February in 1919, and on 1 March in 1920.

Œnanthe opistholeuca Strickl. (12 skins.)

Strickland's Chat is a fairly common winter visitor, arriving about the middle of August (earliest dates 16 August, 1918, and 15 August, 1919) and remaining well into March. These birds are then replaced by migrants, which pass through in small numbers during the first fortnight of April.

Cercomela fusca (Blyth). (2 skins.)

Only found in the district on the small hills about Yakuwala, where it is fairly common. As it was found there on both of my two visits in February and August 1919, it is doubtless resident.

Saxicola macrorhyncha (Stoliczka). (9 skins.)

So little is known and on record regarding this rare Whinchat, and its future status and even existence is so likely to be affected by the progress of the irrigation systems of India, that I propose to deal with it in some detail. I had previously only met with it in the Sirsa sub-division of the Hissar District, as recorded in the Journal Bombay N. H. Soc. vol. xxiv. p. 191.

In Jhang District, Stoliczka's Whinchat is very local, and not abundant even where it occurs. Its favourite haunts are the wide plains of a hard, sandy soil, fertile when ploughed and irrigated, but normally of the consistency and appearance of a "made up" tennis-court; they are bare of grass for the most part, but are studded with the small desert plants of "Uck" and "Karil" (wild Caper), and diversified with small sand-dunes and broken ground. Such plains are common

throughout the district, but only here and there is the Whinchat found. Its stronghold appears to be in the wildest part about Khiwa and Mukhiana, but it was noted also at Mochiwala, Bhowana, Ludhamani, and Winoka. A few pairs also inhabit the somewhat different area of the Nurpur Canal escape, where the running-off of volumes of waste canal-water has produced great reed-beds, surrounded by jungles of "Pampas grass." Curiously enough, the Whinchat was not found on the wide Shorkot plain, which would seem to be eminently suitable to it. One or two individuals were seen actually in cultivation, but always in the vicinity of waste ground.

It has long been a question where this Whinchat bred, though Hume surmised that it was a resident species, breeding on the desert-plains, where it was found in winter. This surmise was correct. I had not the pleasure of finding the nest and eggs, but met with the birds paired in April and July, and obtained young birds in the first or juvenile plumage in August and September. So there can be no doubt that the bird is strictly resident.

In habits Stoliczka's Whinchat resembles the other members of the genus, perching on the tops of bushes or stems, at times fairly tame, at others surprisingly wild. *Œnanthe deserti* is the common bird of the same ground, and with it the Whinchat is on good terms, neither shy nor pugnacious in its presence. I never heard any call-note uttered. In the field it is easily distinguished from other Chats by the longer, slimmer build, the long tail, and the conspicuous long black bill. The white of the throat shows up at a distance. The whitish tail, with its dark centrals and ends, shows clearly in flight and resembles that of a Wheatear; in fact, there is more danger in the field of overlooking the species from its resemblance to some of the female Wheatears than from any resemblance to *S. t. indica*.

Nine specimens were collected, and there were previously two in my collection from Sirsa. I have also examined the small series in the British Museum. The account of the plumages given in the 'Fauna of British India' by Oates is

not correct; and although my specimens do not supply a full history of the changes undergone by the bird, the following notes may be of interest:—

Juvenile plumage (2 specimens; July and September).

Upper surface earthy brown, streaked and spotted with pale creamy buff; upper tail-coverts pale creamy buff; wings dark brown, all the feathers edged with rufous, the median coverts with triangular whitish tips; tail dark brown, all the feathers edged on both webs and tipped with rufous; the outer pair of feathers have the entire outer web and a small portion of the base of the inner web rufous; sides of the head, lores, and ear-coverts dirty white, mottled with brown; the lower surface dull buffish white, mottled with brown on the throat and breast. This plumage is therefore entirely similar in character and markings to the juvenile plumage of *Saxicola r. rubetra* (L.), which is, however, much redder in tint. It is moulted in September.

The adult male in winter plumage is as described (F. B. I. vol. ii. p. 63), except that the upper tail-coverts are pure white, broadly tipped with rufous; the primary-coverts are pure white, with some black on the inner webs.

First winter males are apparently to be distinguished by the less pure and shining white of the throat, the lesser extent of white on the tail-feathers, and by the primary-coverts, which are blackish brown with white edges.

The adult females and first winter females appear to be indistinguishable. They are similar to males in winter plumage, but the upper tail-coverts are pale rufous, the white of the chin and throat and the warm buff of the breast are less marked, so that the two areas are not in such marked contrast; the white shoulder-patch is reduced in area or wanting; the primary-coverts are similar to the rest of the wing. The tail lacks the white patches on the inner webs.

The adult male in summer plumage is very handsome, resembling somewhat *Oreicola ferrea* in summer: this plumage appears to be assumed partly by moult and partly by abrasion. The whole of the upper surface, except the tail-coverts which are white, is sooty black, the feathers more or less edged,

according to wear, with creamy buff; a narrow white supercilium from the nostril to the end of the ear-coverts; the sides of the head and the sides of the throat in a well-defined line, black; centre of chin and throat, and upper breast pure shining white; remainder of lower surface creamy buff, warmest in tint on the breast and sullied throughout by the blackish bases of the feathers; wings and tail as in winter plumage, but more unicolorous owing to the wearing-off of the fringes, the white shoulder-patch becoming very marked.

The adult female in summer plumage is not represented in series, but from birds seen and not obtained it is probable that there is not much difference in this sex between summer and winter plumage.

In any stage of plumage, even when the white of the tail is wanting, this bird is distinguished from the female of *S. torquata indica* by the length and breadth of the bill, by the colour of the under parts, and by the paler, purer brown of the tail-feathers.

Saxicola torquata indica (Blyth). (8 skins.)

The Stonechat is a passage migrant in fair numbers through the district about March and the first half of April and again in September. In addition, it is to be found generally distributed in small numbers as a winter visitor.

Saxicola leucura (Blyth). (6 skins.)

This species was first procured in the district at Dab Kalan by Dr. C. B. Ticehurst, who secured five specimens on 24 and 25 December, 1918. These birds were obtained in a patch of tamarisk and "Pampas grass" lying between cultivation and a pool of water in one of the channel-beds of the river. On 1 January following I secured the male from a pair in tamarisk scrub at the edge of fields of vetch and wheat just across the river at Ahmedpur.

The species was also met with in small numbers about the reed-beds of the Nurpur escape in January and February. It probably occurs as a resident species all along the river-bed of the Chenab, but I was unable to verify this owing

partly to the difficulty in touring these areas in the hot weather when the river is in flood, and partly to the difficulty of distinguishing *S. leucura* and *S. t. indica* in the field.

Saxicola caprata rossorum Hartert. (6 skins.)

Although more common in the riverain areas, the Pied Bush-Chat is resident and generally distributed throughout the district. Its numbers are apparently reinforced by an immigration about February, and in March the pleasant song and curious courting display are to be heard and seen ; the latter consists of the male flying up into the air with the tail spread widely and the wings flapping slowly, held high about the head.

Phœnicurus ochrurus phœnicuroides (Moore). (10 skins.)

An abundant winter visitor and generally distributed. It arrives in September (earliest dates 12 September, 1918, and 13 September, 1919) and remains common until well into April ; the latest date on which it was observed was 20 April, 1919.

An albinistic specimen was procured, as recorded in the Journ. Bombay N. H. Soc. xxvi. p. 289.

Phœnicurus erythronota Eversm. (19 skins.)

A male was first obtained on 18 February near the town of Shah Jiwana, and a female was shot at Rivaz bridge over the river Chenab, about 10 miles from Shah Jiwana, on 12 January, 1919. No others were seen in those two winters, but early in 1920 a great number visited the district. The first two were seen on 1 January, but no more were met with until 12 January, after which they were abundant until the end of the month. Two only were seen in February, both on the 13th. From my notes it appears that I personally saw some fifty of these Redstarts in all. All the birds were in the area which lies between Jhang and the Shahpur District boundary on both sides of the Chenab River. They were found for the most part either in the avenues of Kikur-trees which line the canal-banks or in groves of small Kikur-trees, often in

most arid spots. This is a considerable extension of the known range of this species in N.W. India, as I have already recorded at length (Journ. Bombay N. H. Soc. xxvii. pp. 403–405).

Thamnobia fulicata cambayensis (Lath.). (3 skins.)

A resident species, and thinly distributed throughout the district, nowhere absent and nowhere abundant.

Copsychus saularis L.

A male was seen in the rest-house garden at Chiniot on 19 February, 1919.

Luscinia svecica pallidogularis (Sarudny). (2 skins.)

A winter visitor in small numbers, and apparently also a spring and autumn passage migrant; it first appears in September (earliest dates 13 September, 1918, and 10 September, 1919), and may be met with until the end of March (latest dates 24 and 30 March, 1919). It is particularly partial to the neighbourhood of jheels.

Prunella atrogularis (Brandt). (2 skins.)

The Black-throated Accentor was observed regularly each winter as follows:—

1917. 27 December. One shot by Dr. Ticehurst in a patch of "Pampas grass" at Kadirpur.

1918. 11 February. One shot in the bush-clad border slopes of the "Thal" at Mochiwal.

1918. 20 December. Two or three in the "Pampas grass" at Nurpur escape.

1919. 25 December. Two in the "Budh" at Mochiwal.

Hirundo rustica rustica L.

The appearances of the Swallow in the district are somewhat erratic, and it is difficult clearly to understand their status. A number are to be seen about the riverain in August and September (earliest dates 8 August, 1918, and 19 August, 1919), and these are doubtless passage migrants

which have followed the rivers down from Kashmir. Then during November and December occasional birds and large flocks are to be seen mostly in the neighbourhood of jheels. I have no records for January or February, but in March 1918 a few Swallows were seen.

A doubtful record of two birds on 1 April and a single bird seen on 4 May, 1919 complete my observations on the species. In other districts of the Punjab I have found the same difficulty as to the exact status of the Swallow, and the probable explanation is that it is more easily affected than most birds by the vicissitudes of food-supply and climate, and uses its powers of flight to escape them.

Hirundo daurica, subsp. ?

A few Striated Swallows were seen at Jhang on 10 and 12 September, 1918, and on 5 May, 1919 ; unfortunately I failed to secure specimens, so the race remains undetermined.

Hirundo smithii Leach.

For the most part the Wire-tailed Swallow is a summer visitor, and at that season it is to be found throughout the area of the canals, breeding under the canal-bridges and in the porches and verandahs of every canal rest-house. My notes do not clearly show the date of its arrival, but nests with eggs or young may be found throughout July and August, and the species remains common until the end of September. It is seldom seen away from water. An occasional bird may be seen throughout the winter months.

Riparia chinensis (J. E. Gray). (3 skins.)

This tropical form of Sand-Martin breeds commonly about the Chenab River from November till about April, but I do not feel certain that it is a resident species. Sand-Martins were seen throughout the year, except for the months of June and July, and only a few were observed in May and August, but it is probable that one or more races of *Riparia riparia* appear as migrants in the district. Although no specimens were obtained, birds were seen which looked

different to *Riparia chinensis*, larger and, in the case of one flock, with paler rumps. This is the more probable in that birds found breeding at Jhelum (Ibis, 1916, p. 69) were referred to *Riparia riparia* and described as a new race of that form, *R. r. indica* Ticehurst. I have carefully compared these Jhang birds with those from Jhelum, and there is no doubt of their distinctness. On the other hand, breeding-birds obtained in January and February at Campbellpore and Attock by Mr. A. E. Jones are the same as the Jhelum birds. It is clear that a lot of work remains to be done as regards the Sand-Martins of India.

Riparia rupestris (Scopoli).

A winter straggler only; one was seen at Jhang on 8 March, 1918, one or two about the low hills at Yakkuwala on 23 February, 1919, and one at Jhang on 2 January, 1920.

[**Delichon urbica** (L.).

Two Martins seen on 13 October, 1918, were almost certainly of this species.]

[To be continued.]

XVII.—*Remarks on the Japanese Petrels of the Genus* Oceanodroma. By Nagamichi Kuroda, Rigakushi, M.O.S.J., F.M.B.O.U.

Viscount Y. Matsudaira, M.O.S.J., has recently collected a series of Petrels off the coast of Sagami Bay, Hondo, Japan, and has sent them to me for examination. They are preserved in his collection. I examined them very carefully, and came to the conclusion that the series contains two species. They are as follows:—

Oceanodroma melania (Bonaparte).

Oceanodroma markhami owstoni (Mathews & Iredale).

Here I may mention the difference between these two birds, as shown in the following key :—

1. Shafts of primaries white in about the basal third of their length; head not distinctly tinged with greyish ..... *O. melania.*
2. Shafts of primaries black; head distinctly tinged with greyish ..... *O. owstoni.*

Oceanodroma melania (Bonaparte).

Procellaria melania Bp. C. R. xxxviii. 1854, p. 662 : Nicaragua to California.

This is an American species. Viscount Matsudaira obtained five male examples (all adult birds) off the coast of Sagami Bay, 4 to 28 May, 1921. I have examined these specimens, and found that they no doubt belong to the species. They agree very well with plate 6 of Godman's Monogr. Petrels. They are a deep sooty brown, and have the shafts of the primaries white for about the basal third of their length. The first primary is always longer than the fourth in the five specimens before me.

Salvin (Cat. B. Brit. Mus. xxv. 1896, p. 354) mentioned that a specimen from Japan in Canon Tristram's collection, attributed to *O. melania* by Seebohm, is not a true *O. melania* but should be referred to *O. tristrami*, and Dr. Hartert is also of the same opinion, as follows :—

"Seebohm liess sie irrtümlicherweise in Japan vorkommen, da er sie mit *tristrami* verwechselt hatte" (Vög. pal. Fauna, ii. p. 1416).

If Seebohm's identification was erroneous, it seems probable that this is the first occasion on which the form has been obtained in Japanese waters. The following are the measurements in millimetres :—

Sex.	Exposed culmen.	Wing.	Tail.	Tarsus.	Middle toe without claw.	Depth of tail fork.	Date.
♂	17·5	184	98·5	26	21	32·5	4. v. 1921
♂	17	189	100	28	23·5	34	21. v. „
♂	17	185	100	27	23	33	„ „
♂	18	186	98·5	27	23	31	28. v. „
♂	19	180	98	26	23	28·5	„ „

The culmen, wing, and tarsus are longer than the measurements given by Salvin, Godman, and Bailey, as is shown from the following table:—

Bill.	Culmen.	Wing.	Tail.	Tarsus.	Depth of tail fork.	Measured by:
0·82 in.=20·5 mm.	0·6=15	7·0=178·5	3·5=89	1·21=31·5	—	Salvin
—	0·5=12·5	6·8–7·0=174·5–178·5	3·3=84	1·2=31	—	Godman
—	—	6·8=174·5	3·9=100	1·2=31	1·2=31	Bailey

If the Japanese examples have constantly a longer culmen, wing, and tarsus than the true *O. melania* in a more extended series, I propose to call them by the new name of

Oceanodroma melania matsudariæ, subsp. n.

Oceanodroma markhami owstoni (Mathews & Iredale).

Procellaria melania (nec Bp.) Seebohm, Bds. Jap. Emp. 1890, p. 270.

Oceanodroma fuliginosa (nec Gm.) Stejneger, Proc. U.S. Nat. Mus. xvi. 1893, p. 620.

Oceanodroma markhami (nec Salvin) id. op cit. p. 621.

? *Oceanodroma tristrami* Salvin, Cat. B. Brit. Mus. xxv. 1896, p. 354 (type, Sendai Bay, Hondo, Japan).

Cymochorea owstoni Mathews & Iredale, Ibis, 1915, p. 58 (type, Okinose, in the Sagami Sea).

The form is a distinctly larger bird than typical *O. markhami*. In my opinion it is not separable from it as species but is subspecifically distinct.

A large series was obtained by Viscount Matsudaira off the coast of Sagami Bay, Hondo, Japan, from early to the end of May of the years 1917, 1920, and 1921. These birds agree perfectly with the description of Mathews & Iredale.

Dr. Hartert believed that *O. tristrami* was the young of *O. owstoni*, and that the name cannot be used for the bird for the following reasons:—

"Die Beschreibung wurde von Ridgway entworfen, der Name von Stejneger vorgeschlagen; der Autor kann daher nur eigentlich Ridgway sein. Ich vermute, dass der leider verloren gegangene Typus eine junge *O. owstoni* war,

und wenn es ein junger Vögel war — wie Salvin meint, ohne ihn gesehen zu haben — so würde das zu kleine Flügelmass dadurch erklärlich. Da jedoch der Name nicht absolut sicher ist, nehmen wir besser Mathews' neuen Namen an ; auch Stücke von Sendai Bai werden die Frage kaum entscheiden können, da dort die Art nur eine zufällige Erscheinung sein dürfte" (Vög. pal. Fauna, ii. p. 1416).

Dr. Hartert's opinion, I think, is quite correct, and the usual habitat of the bird is off the coast of Sagami Sea, where the type specimen of *O. owstoni* was obtained.

A specimen obtained at Torishima in 1891, and now preserved in the Science College Museum in Tokyo, has been examined by me. It agrees well with the Sagami specimens before me. It was identified by Dr. Stejneger as *O. fuliginosa* (Proc. U.S. Nat. Mus. xvi. 1893, p. 620).

Viscount Matsudaira has sent me an additional thirteen specimens from his own collection. There is no great individual variation except that the two newly-moulted birds (probably young ones) are rather darker grey than sooty, as in the other somewhat abraded specimens. One of them has its bill less stout and much like that of true *O. markhami*. Moreover, these two birds have their wings decidedly shorter than in the others, but the length of tarsus and toes of the two specimens are equal to the length of those of true *O. owstoni*. I am inclined to think that these two birds are not *O. markhami*, but the young (probably the bird of the second year) of *O. owstoni*. Another specimen, I suppose, is a young of the year. It has the mantle-feathers fringed with pale colour.

There is a variation of the wing-formula of these birds as follows :—

The first primary longer than the fourth ...	5	examples.
„ „ „ about equal to the fourth	4	„
„ „ „ shorter than the fourth...	4	„

The length of tarsus in true *O. markhami* is only 24 mm.

No females were obtained by Viscount Matsudaira.

Measurements in millimetres.

Locality.	Sex.	Exposed culmen.	Wing.	Tail.	Tarsus.	Middle toe without claw.	Depth of tail fork.	Date.
Torishima	(?)	19	186	115	27	27	40	1891.
Sagami Bay	♂	17·5	190	105·5	30	27	38	11. v. 1920.
do.	♂	18·5	183	108·5	27·5	24·5	39·5	16. v. „
do.	♂ juv.	18	185	105·5	27	25	36	„ „
do.	♂	18·5	180	106	30	25·5	36·5	7. v. 1921.
do.	♂	18	185	105·5	28	25·5	34	25. v. „
do.	♂	18	180	100	27	25·5	35	„ „
do.	♂	18·5	184	99·5	28	25	33·5	„ „
do.	♂	17·5	178	104	29	26·5	33·5	26. v. „
do.	♂	19	181	105	28	26	34·5	28. v. „
do.	♂	19·5	186	106·5	29	26	35	„ „
do.	♂	18	187	100	28	24·5	31	29. v. „

Measurements of the two newly-moulted birds (probably the young of *O. owstoni*).

Locality.	Sex.	Exposed culmen.	Wing.	Tail.	Tarsus.	Middle toe without claw.	Depth of tail fork.	Date.
Sagami Bay	♂	18	178	102	28·5	25·5	33·5	24. v. 1917.
do.	♂	18·5	165	98	27·5	26	32·5	28. v. 1921.

We have three other distinct species of *Oceanodroma* in Japanese waters, as follows :—

Oceanodroma leucorrhoa leucorrhoa (Vieillot).

Hab. Kurile Is. and Hokkaidō.

Oceanodroma monorhis monorhis (Swinhoe).

Hab. Prov. Mutsu, N. Hondo ; Loo-Choo Is. ; ? North-eastern Formosa.

Oceanodroma furcata (Gmelin).

Hab. Kurile Is. ; Hokkaidō ; Hondo (Sagami, Suruga, Kobe).

XVIII.—*Modern Nomenclature and Subspecies.*

By H. J. Elwes, F.R.S., M.B.O.U.

I have long had it on my mind to write something on this subject, which in Botany and Entomology, as well as Ornithology, is becoming one of the greatest difficulties which any student has to cope with. If I wanted a good proof that our branch of biology, which has been raised, largely by British ornithologists in the pages of 'The Ibis,' to a higher standard of knowledge than any other kindred study, I cannot find a better one than the last numbers of this Journal. Comparing it with a volume of the time when I first joined the B. O. U. in 1866, I find that the whole scope of our work is changed, and that some of the most active and enthusiastic workers of the present time are devoting themselves to the study of the minute variations of birds, or to the attempt, in which there seems no prospect of finality or agreement, to discover what are the oldest names of many of our long known species.

As a proof that my opinion is not without support from ornithologists of knowledge and repute, I will refer first to a paper by our late President, Dr. Eagle Clarke, in the 'Scottish Naturalist' for September, 1912, on "The New Nomenclature of British Birds." He recites briefly the

history of the question, and states that the 'Handlist of British Birds,' published in 1912, for the nomenclature of which Dr. E. Hartert was mainly responsible (*cf.* Introduction, p. xii), has changed the scientific name of no fewer than 226 out of 417 species there recognized as belonging to the British avifauna, from those that were adopted in the last edition (1907) of Saunders's list.

These changes were largely due to the adoption of a rule for which the International Committee were responsible, but which was never agreed to by many of our best ornithologists, viz., that the 10th edition of Linnæus should be taken as the starting-point for priority instead of the 12th. The lamentable results of this change cannot be better shown than by the well-known and often cited cases of the common Wild Duck and the Song-Thrush. That a man who must have known both these birds as well as any living species, could have made such careless changes in their names in his own books, seems to me an excellent reason for saying that, however great a systematist Linnæus might have been, neither he nor his works deserve to be treated as a fetish, or to be worshipped by his successors for ever. I think we have made a great deal too much of Linnæus's claim to be the founder of binomial nomenclature; and now that we have necessarily adopted trinomialism, whatever reasons there may have been for this rule, seem to me to have more or less disappeared. But there are a number of old authors who have not, and never had, any claim to real knowledge of the species to which they gave names, who deserve even less recognition; and it is just such cases as those pointed out by Dr. Ticehurst in our last number (Ibis, 1922, p. 147) which will, for years to come, cause names founded in obscure and forgotten publications of no scientific value whatever, to be used by the strict worshippers of priority.

Let us now consider the opinions of the most recent writers on these questions. I will take the letter of Mr. Loomis in 'The Ibis,' 1920, p. 964, "On the last phase of the subspecies,"

as my starting-point. In it he expressed what is in my opinion a sound idea, when he stated at the end of his letter that "the foundation of the subspecies is an unstable variation and in consequence the structure is collapsing." In a letter by Dr. Lowe and Mr. Mackworth-Praed (Ibis, 1921, p. 344) they say that Mr. Loomis's letter will be welcomed by many ornithologists on this side of the Atlantic, and not least by some of those who might be termed subspecies men. They go on to say that trinomialism supplies a handy (not invariably handy) adjective which is internationally understood and which designates birds from a certain locality (may I add, and often very ill-defined or uncertain locality or separate localities) in a short and concise way (may I qualify this by saying that, in the hands of some followers of the subspecies mania, the differential characters are anything but short or concise); and that "in some cases the recognition of subspecies enables us to map out migration routes of birds from any given locality, and to note the effect of environment on any given species throughout its range." They further say that they do not believe that natural selection as defined by Darwin can have any practical effect on the actual formation of species, nor do they believe in the direct action of environment on the formation of new species. They then point out that there are at least two forms of variation, one known as "mutational" and the other as "environmental," and that many of our present-day subspecific forms would probably quickly disappear if the organism were transferred from its normal environment to some other of a different nature. On this there is plenty of evidence among mammals and plants if not among birds. They conclude a very valuable and thoughtful letter by saying that it behoves us to set our subspecific house in order with a view to defining more accurately the exact rank of our subspecies. They do not suggest how this is to be done. Neither can I do so under the existing rules.

These letters were reviewed by Col. Meinertzhagen in a most valuable and careful paper (Ibis, 1921, p. 528), "Some thoughts on Subspecies and Evolution," which discusses

very ably the ideas of the previous letters referred to, and deals with five points on which the opinions of many of us seem to be very undecided at present. A careful study of this paper is essential, because most of the points which Col. Meinertzhagen raises, are illustrated by examples from his own knowledge of birds, and he particularly emphasizes the fact that the truth of Mendelian theory rests largely upon artificial experiments on plants, animals, and birds under artificial conditions controlled by man, and not on conditions which exist in wild nature. He says that he can call to mind no geographical race which can be ascribed to mutation. He believes "that all such are due to environment or isolation, both being geographical factors. A mutation has nothing whatever to do with geography." As to the value of a subspecies he gives excellent reasons for accepting them, as the shortest, most scientific, and convenient way of referring to geographical variation, and concludes by saying, "But there are still a few (and I am afraid the number is growing) who regard the trinomial system as a simple and quick way of gaining notoriety, while others look on the method as a confusing and unnecessary invention of the devil." The former class I desire to suppress by some form of boycott; of the latter class I have no personal knowledge.

Col. Meinertzhagen has devoted an immense deal of time and energy, not only in collecting and making field-notes on his collections (*cf.* Ibis, 1921, pp. 621–671 and 1922, pp. 1–74), but has taken unusual pains to name his collection with Dr. Hartert's help in Lord Rothschild's museum. It is evident that in very many cases he was unable to come to any satisfactory conclusion as to how far his specimens could be identified with the numerous subspecies recognised in Hartert's great catalogue. I should not wonder if these cases were little-known African birds; but it is just those common and wide-ranging birds, such as the Ravens, Crows, Sparrows, and Larks, in which the worst confusion occurs. With regard to the Crested Larks, Col. Meinertzhagen's remarks on the influence, or want of influence, which

environment has on the colour of plumage, require careful investigation in the light of Mr. Bonhote's remarks on subspecies and their part in evolution (Ibis, 1921, p. 270); and of Dr. Lowe's still more enlightening paper on "Species and Subspecies" (Ibis, 1922, p. 179). Much better brains than mine, and an amount of study which I cannot give to this very difficult question, are necessary to decide whether it is possible to formulate rules, which can be adhered to by men whose opinions vary, and must always vary, according to the amount of knowledge they acquire, and are capable of using to this end. But we have accumulated evidence that we cannot stop where we are, as, for instance, in the following cases :—Mr. Kuroda has, in his recent paper on "The Birds of Tshusima," followed the example of Hartert and his supporters, and has described, on differences of measurement in bill and wing, a new subspecies of the Blue Rock-Thrush which already has, according to Kuroda, in the Japanese Empire alone, three described forms, only one of which was recognized by Hartert, on p. 675 of his Catalogue, as *Monticola solitarius philippensis*, P. S. L. Müll. ; a name for which he claims priority over *manilla* Boddaert, though the identification is evidently doubtful. Who is to decide between Hartert and Kuroda? The latter may well say that he has a better claim to know Japanese birds than Hartert or any European can have, and when Kuroda has exhausted his ambition for subdivision, some younger Japanese ornithologist may spring up desirous for fame, and adopt another view of the position, either by making several more subspecies, or by uniting them all with our old friend *Turdus cyanus*, or *cyaneus*, of Linnæus in Ed. xii = *T. solitarius* of Linnæus in Ed. x. He may upset and unite under one name the nine subspecies of what Kuroda calls *Sittiparus varius*, into which the *Parus varius* Temminck = *sieboldi* Seebohm = *rubidus* Blakiston *fide* Hartert, has been subdivided mainly by Kuroda, on specimens from various islands of the Japanese archipelago ; of these specimens cannot exist in any sufficient number to enable European ornithologists to form an opinion.

After all, the Japanese may say that the little island of Yakushima has just as good a right to its own peculiar form of Tit as St. Kilda has to a peculiar form of Wren, or the Outer Hebrides to a peculiar Thrush.

These papers were followed up by Mr. Bonhote (Ibis, 1921, p. 720) in a paper on "Subspecies and their part in Evolution," in which he agrees with Col. Meinertzhagen that "a mutation cannot establish a subspecies, since to my mind a subspecies is entirely an environmental or geographic form," and ends by asking, "Have we any definite knowledge of a new species originating as a mutation?" He mentions *Pavo nigripennis* and *Athene chiaradia* Giglioli, Ibis, 1903, p. 1, as possible exceptions.

Dr. Lowe in his letter on Species and Subspecies (Ibis, 1922, p. 179) gives us, however, three concrete examples of discontinuous or mutational subspecies as follows:—*Pluvialis apricarius oreophilos* Meinertz. (Bull. B. O. C. xlii. 1921, p. 6), *Podiceps cristatus infuscatus* Salvad., and *Querquedula discors albinucha* Kennard, which latter case he considers specially interesting because the character which distinguishes it has apparently not as yet been completely and permanently established. He goes on to indicate briefly the fundamental difference between these discontinuous or mutational variations, and the superficial somatic changes induced by mere environment. He points out how the former owe their origin to deep-seated gametic factors, indicating by way of proof, in a footnote, how in the twinkling of an eye, as it were, a form which is to all intents and purposes nothing else than *Gennæus lineatus* can be produced by the crossing of *G. horsfieldi* and *G. nycthemerus*. It is to this new conception of the origin of species, a conception we owe to the work done by the followers of Mendel, that ornithologists must in the future turn their attention, or so at least he seems to suggest. Dr. Lowe concludes by saying that though it is impossible as yet to deal with the question of subspecies and their classification, he hopes that the subject will be more carefully and thoughtfully studied. And I particularly recommend the perusal of all these papers to

the men described by Col. Meinertzhagen who regard trinomials as an easy way of gaining notoriety.

I will now allude to another paper on "Modern Zoological Nomenclature" by Mr. Robert Gurney, published in the Transactions of the Norfolk and Norwich Naturalists' Society, 1918, p. 335, with most of which I heartily agree. In this he points out that the differences of names between the 'Handlist' and the B. O. U. List, which, at the time the latter was published, I found to amount to nearly 100, either of generic or specific names, are due to four causes :—

(1) Differences of opinion regarding method of naming and validity of subspecies. On this point I will enlarge later on.

(2) Differences of specific names due to different interpretations of authors' descriptions.

(3) Differences due to the retention of names by the B. O. U. Committee as *nomina conservanda*.

(4) Differences of generic names due to disagreement as to types and authority of genera.

I may point out that in this last case the rules followed by botanists are different, in that they allow any author who on better knowledge, or different opinions as to the value of generic characters, transfers a species to a new genus, to attach his name to the species. For instance, if I thought that *Turdus merula* L. was not a true *Turdus*, and called it *Merula merula* or *Merula vulgaris*, it would become *M. vulgaris* Elwes, or if I called it *Neoturdus* it would be *Neoturdus merula* Elwes. The effect of this practice in horticulture has been to my mind disastrous, and experience has proved that when a name has become well-established in garden and commercial use, it is impossible to effect a change however good the authority for such change may be. I venture to predict that there will be a similar strike amongst English bird-lovers if we continue our present practice. It may be asked, and should be asked, what is your remedy? My remedy is drastic: namely, that we shall give a lead to other countries by adopting a new rule, by which all questions of priority

shall for ever be decided. This is that the starting-point for priority shall not be Linnæus 10th, 12th or any other edition; but a list, catalogue, or book of comparatively recent date, approved and sanctioned by a strong committee representing all shades of opinion in the country, as the best and most reliable starting-point for the nomenclature of the birds, mammals, fishes, and other orders respectively. And that a new rule should be made to this effect:—That no new names of species or subspecies should be recognized as binding and properly published, until they have been accepted and passed by the committee appointed for that purpose by a constituted authority such as the B. O. U. Reasonable men, who alone have a right to be considered, would, I believe, be willing to sink their differences of opinion which must always exist in such cases as are specified by Mr. Gurney, or in other cases which might arise as our knowledge increases. New names or changes in names given by unreasonable men, or men who were considered by the authority as cranks, or whose position in the world of science does not justify them in giving names at all, would simply be ignored and boycotted by their fellows.

Now it may be objected, and rightly so, that such rules could be applied only in countries where the knowledge of the particular class of objects concerned had reached a point which has not yet been reached in many new and distant countries, or in many branches of biology; that such rules would have no international authority, and would not deter naturalists from describing new or supposed new forms in languages such as Polish, Hungarian, Bulgarian, or in Asiatic languages generally. That is, I think, a very desirable object to aim at, for as the rule stands there is nothing to prevent the publication of new names in daily newspapers, or by obscure local Societies in languages which cannot be understood generally. I would insist on some international language for such cases as these. Latin used to be the language of science; English, French, and German are possibly preferable if the greatest good of the greatest

number is considered. Another objection will be made, namely, that though this rule could be followed in the case of species, yet it could not be made to apply to such minute subdivisions of species as are being adopted by modern naturalists.

To this latter objection I can suggest no remedy until there is more general agreement as to the limit which may be allowed to this practice. In Botany it has reached a point of folly which cannot be imagined by an ornithologist. In proof of this I may say that in the fourth Supplement to the 'Index Kewensis,' which contains the names of all plants described as new in the five years 1906–1910, I find over forty columns, each containing about forty names, in the one genus *Hieracium*; of these 1600 names three men are responsible for by far the greater number. I could cite cases among the Lepidoptera which, if not so outrageous as this, have led to many complaints amongst butterfly-collectors. Lt.-Col. Evans, perhaps the best authority in India, writing in the 'Journal of the Bombay Natural History Society,' xxviii. 1921, p. 32, says:—"Nothing annoys the amateur student so much as the apparently useless changes in nomenclature." He goes on to say: "It is a great pity that we have no International authority empowered to issue an authoritative list of known families, genera, and species. Any alterations or additions might be proposed by individuals, but should not come into force until approved by the central authority after due discussion in scientific journals; all delving into the past should be vetoed as far as nomenclature is concerned; the result would be that the energies of many excellent naturalists would be diverted to useful progressive work from what might be termed useless retrospective labour."

I had hoped to conclude this paper by an examination of the results arrived at by Beebe in his account of *Phasianus colchicus* and its numerous subspecies, but this must be deferred to our next number.

RIAÑO

VIEW FROM ABOUT 4,000 FT. ELEVATION,
NEAR RIAÑO

THE RIVER ESLA NEAR RIAÑO.

POTES WITH THE PICOS DE EUROPA
IN THE BACKGROUND.

XIX.—*Results of a Collecting Trip in the Cantabrian Mountains, northern Spain.* By H. F. Witherby, M.B.O.U.

(Plates III. & IV.)

As scarcely any material was available from the western side of northern Spain for comparison with birds from Portugal and elsewhere in the Peninsula, I determined to make a collecting trip to that region.

Accordingly my wife and I sailed from Southampton, bound for Vigo, in the Royal Mail steamer 'Arlanza' on 16 September, 1921. Crossing the Bay of Biscay on 17 September, we had eight Turtle-Doves, one Spotted Flycatcher, one Yellow Wagtail, one Common Wheatear, and one Sanderling come on board, the Turtle-Doves staying all day, for the most part perched with wings half spread on the wireless mast. On the 18th, when sailing down the Spanish coast between La Coruña and Vigo, we saw several Gannets (all "piebald"), *Larus fuscus fuscus* and *Larus fuscus affinis* and a few *Larus argentatus cachinnans*. In April 1920 the Mediterranean Herring-Gull was very plentiful along this part of the coast (where they breed), and their comparative scarcity in September may indicate an autumn movement. Perhaps the most interesting birds we saw on this day, however, were numbers of *Puffinus kuhlii*. Whether these were of the Mediterranean or the Atlantic form of course I cannot say, but they were in very considerable numbers. It was a beautifully clear and bright day, and all the way between La Coruña and Vigo the ocean was dotted with small parties of these Shearwaters. They were constantly going down to the water and sitting on the surface, evidently engaged in getting food of some kind. There were a good many porpoises about, and these apparently caused some food to come to the surface in considerable quantity as the Shearwaters constantly collected round them, often as many as twenty at a time. So far as I know, *P. kuhlii* does not breed north of the Berlenga Islands, off

Lisbon, where Mr. W. C. Tait found them in 1879, and it was suprising to see them in such large numbers more than 200 miles to the north.

Arrived at Vigo, we received every possible assistance from Mr. T. Guyatt, H.B.M. Consul, with whom I had been in correspondence for some time. Mr. Guyatt took the greatest interest in our trip, and had it not been for his very kind assistance, it would have been impossible to have made a successful collecting trip in so short a time, but Mr. Guyatt smoothed the way for guns and cartridges and permits, and provided us with information of all kinds. I must also here record my sincere thanks to Señor E. Duran, C.B.E., of Vigo, for much assistance, to Mr. M. W. McKenzie, H.B.M. Vice-Consul at Rivadesella, who gave us most valuable information about the Picos de Europa region, and to Mr. Abel Chapman, who also supplied me with useful information.

At Vigo we were joined by Señor A. P. Lopes, who had accompanied us as a skinner the year before in Portugal; and one could not wish to have a better and quicker skinner, or a more cheerful and willing companion than Lopes. The difficulty always was to give him enough to do, for he much disliked being unemployed and was not accustomed to collecting himself.

We travelled by rail to Leon, where we stayed a day to interview the Governor of the Province, who very kindly provided us, at the request of Mr. Guyatt, with a most effective permit, which not only allowed us to collect freely, but bid everyone concerned to assist our "misión cientifica" to their utmost ability.

Thus armed we arrived at Riaño after a five hours' motor diligence ride from Leon at mid-day on 23 September, and immediately set to work. Riaño is a small village devoted to goats, sheep, cows, and pigs in a valley at an elevation of 3300 feet on the south-west side of the Picos de Europa and in the north-east corner of the province of Leon. We were very comfortably housed in the Fonda Montanes, a small and primitive but clean inn, where we

were very well fed. I may here state that all the inns we stayed at in this somewhat remote district were clean and good, while the people of the country were delightful—always ready to help and never interfering or inquisitive.

From Riaño we went by motor diligence to Cangas de Onis, passing through a remarkably long, winding, and very narrow gorge. A short light railway from Cangas took us up to Covadonga, where there is a large hotel as well as a shrine and a cathedral, to which many make pilgrimage. As the valley here was too steep and too cultivated to make a good collecting ground, we journeyed by motor diligence *via* Carreña and Panes to Potes, this being a two days' journey, with a stop for the night at Carreña. Between Panes and Potes is another long and very narrow gorge, similar to that near Cangas. Potes, in the province of Santander and on the eastern side of the Picos de Europa, is a considerably larger village than Riaño and, lying lower (about 1100 feet above sea-level), has more cultivation. To reach good collecting ground here we had to travel much farther away from our inn than was necessary at Riaño. From Potes we returned to Panes, which is on the border of the province of Asturias, and collected there for a few days. This village is only about 300 feet above sea-level and the hills round it are only small. From Panes we returned home *via* Santander, Bilbao, San Sebastian, and Paris.

All our collecting was done at Riaño (23 September to 2 October), Potes (5 to 13 October), and Panes (14 to 19 October).

Both Riaño and Potes are in valleys with fair trout streams, the river Esla at Riaño being rather broad and shallow, while the Deva at Potes is narrow and for the most part hidden and almost inaccessible in a deep-cut channel. All along both rivers Dippers were more numerous than I have seen them anywhere else, while both White and Grey Wagtails were common. In these main valleys Chaffinches, Serins, Buntings (Yellow, Cirl, and Rock), and Blackbirds were also common, as were Song-Thrushes at Potes, though the latter were much scarcer at Riaño.

Branching off the main valley were numerous small and usually very narrow and winding valleys with steep sides. On the lower ground at Potes these were covered with scrub or small cork-oak and ilex trees, with here and there Spanish chestnut. This we did not find a good ground for birds, but at Riaño and in the higher ground near Potes were valleys whose sides were often thickly covered with woods, consisting chiefly of oak, hazel, and some small beech, while down the middle were often poplars, ash, and other trees and, near Potes, walnuts. The oak woods were either very thick, the trees being pollarded and the undergrowth almost impenetrable, or much more open, with the trees high and trimmed to the top.

In all these woods, but chiefly in the thicker ones, Jays, Chaffinches, Robins, Tits, Nuthatches, Creepers, and Firecrests were plentiful, while Woodpeckers of three species (Green, Great Spotted, and Middle Spotted) and other birds were met with here and there. During the whole of our stay birds were very silent indeed, and the woods being very thick, collecting was not easy.

There was also much open ground in the region of the higher woods, often with good turf, carpeted with the lovely blue-mauve autumn crocus, slopes of heather, broom-scrub, and scattered thorn-trees. Here were Stonechats, Black Redstarts, a few Wheatears and Hedge-Sparrows, and often companies of Mistle-Thrushes and parties of Carrion-Crows.

Above the woods (at about 4000 feet) one generally came to rock-strewn slopes, thinly covered with grass, before reaching the bare pale grey limestone peaks. On these slopes Red-billed Choughs fed and the Grey Partridge was seen, while on the rocky peaks were more Choughs and Black Redstarts with, usually, Kestrels flying around. But we did not penetrate into the high, rocky Picos de Europa themselves where H.M. the King of Spain hunts chamois, as this meant a considerable expedition, which we thought hardly worth while, in view of the few birds likely to be met with and the short time at our disposal. Irby records

the Wall-Creeper and Alpine Accentor, and Gadow states that he observed the Snow-Finch in the Picos.

At Panes the river was broader and bordered with alders, poplars, and willows with many briar thickets. Here we found Chaffinches, Goldfinches, Tits (especially Long-tailed), Creepers and Firecrests with many Blackbirds, Song-Thrushes, Robins and Wrens, while Chiffchaffs were common and Blackcaps more frequent than elsewhere. Here also we found Cetti's Warbler, which we did not meet with elsewhere. In the low hills round Panes were many thickets of hazel and thorn, while most of the large trees were Spanish chestnuts, but many of these were dead. On this ground we found most of the birds we had seen in the woods at Riaño and Potes, but Middle Spotted Woodpeckers were apparently absent and Marsh-Tits were scarcer.

Nowhere in all this region did we see any conifers, and the absence of cistus, so plentiful in most parts of Spain and Portugal, was most marked.

Potes was visited by Lilford and Irby in May and June 1876, and the latter published a paper on the birds they found in 'The Ibis' for 1883 (pp. 173–190). Comparing the species found by these two ornithologists with those we met with and omitting the summer migrants, most of which had left by the time we arrived, we find some differences worth remarking upon, but it is not always possible to be sure of the locality Irby refers to, as many of his observations were made on the coast near Santander.

He records Griffon and Egyptian Vultures and Lammergeyer as common near Potes, especially in the gorge. We saw no Vultures of any kind. It is true that we passed through the gorge rapidly in a closed motor diligence, but it seems curious that we did not see these birds soaring near Potes. Irby also mentions the Hen-Harrier as common, but in this case I think he means near the coast and not in the mountains. We saw no Harriers. Nor did we see any Eagles, and Irby mentions Golden, Bonelli's, and Booted Eagles. Again he mentions the Honey-Buzzard as common

in the beech forests of Llebana. Dr. H. Gadow, in his book 'In Northern Spain,' also refers to the beech forests near Potes and at Riaño, but we failed to find them, and I cannot but think that the woods in these parts have been largely altered by cutting. There may still be beech forests hidden in some high valleys, but those woods which we explored were mainly of oak, and the largest trees were not more than about sixty or seventy years old. At the head of one valley near Riaño at about 4000 feet we saw a dozen or so very large beech-trees, which were probably the remains of one of the forests referred to. The Honey-Buzzard we did not see, but they may have migrated and may still inhabit this country in summer, but this could not be so with the Black Woodpecker which Irby also found frequent in the higher woods. We failed also to find these birds and no one we asked seemed to know them. It is to be hoped that some exist in woods we did not visit, as the bird is not found elsewhere in the Peninsula beyond the Pyrenees. Another interesting species not found elsewhere in the Peninsula is the Capercaillie, which Irby mentions as having both seen and heard. We did not have the same good fortune, and evidently the bird is now very rare. Occasionally one is shot in the spring and usually sent to Madrid, the shooters, we were told, getting as much as 20 pesetas for a bird.

The most interesting species which we found was the Middle Spotted Woodpecker (not known in the Pyrenees, but it may breed in Murcia, see Saunders, Ibis, 1871, p. 66), and the Marsh-Tit, whose distribution in Spain is extremely local, and possibly it breeds only in the Pyrenees and Cantabrians. The Song-Thrush was another interesting species, since on Irby's evidence it breeds here. The only other district in Spain where it may breed is in the Sierra de Gredos, where it was heard singing in mid-May, as recorded by Chapman and Buck in 'Wild Spain,' p. 147.

Magpies, Jackdaws, and Starlings were absent from the mountainous region. Another notable absentee was the Crested Lark, so common in most parts of the Peninsula. As I have before remarked, most of the summer birds had

left; but even if we add those noticed by Irby, the region is not rich in species, and I think this may be accounted for by a sameness in the character of the country. Among the summer birds mentioned by Irby the Willow-Warbler and Red-backed Shrike, recorded as common, should be noted, as it seems doubtful if either of these breeds farther south in the Peninsula.

The chief interest in our collection lies in the geographical forms of the resident species. The distribution of geographical forms in the Iberian Peninsula presents a problem which appears at present very complex, but this may be due to the scanty knowledge we still possess of the subspecies occurring in various parts of Spain. A delightful collecting tour in northern Portugal in 1920, in company with Mr. W. C. Tait, the veteran ornithologist of Oporto, supplemented by many skins sent to me from time to time during the last eight years by Mr. Tait, has given me material to determine the subspecies resident in Portugal from the Tagus northwards. Recently Surgeon-Admiral Stenhouse has published an excellent paper (Ibis, 1921, pp. 573–594) on a collection made by him in the neighbourhood of Algeciras, and by his kindness I was privileged to compare these birds and others collected by Captain Lynes with those from

	Pyrenees.	*Cantabrians.*	*N. Portugal.*	*Algeciras.*
A	Ægithalos c. taiti.	Æ. c. taiti.	Æ. c. taiti.	Æ. c. irbii.
A	Turdus m. merula.	T. m. merula.	T. m. merula.	T. m. algirus.
A	Troglodytes t. troglodytes.	T. t. troglodytes.	T. t. troglodytes.	T. t. kabylorum.
B	Sitta e. cæsia.	S. c. cæsia.	S. c. hispaniensis.	
B	Parus c. cæruleus.	P. c. cæruleus.	P. c. harterti.	P. c. harterti.
B	P. cristatus mitratus.	P. c. mitratus.	P. c. weigoldi.	P. c. weigoldi.
B	Saxicola t. rubicola.	S. t. rubicola.	S. t. hibernans.	S. t. rubicola.
B	Erithacus r. rubecula.	E. r. rubecula.	E. r. melophilus.	E. r. witherbyi.
C	Garrulus g. glandarius.	G. g. fasciatus.	G. g. fasciatus.	G. g. fasciatus.
C	Carduelis c. carduelis.	C. c. weigoldi.	C. c. weigoldi.	C. c. weigoldi.
C	Parus a. ater.	P. a. vieiræ.	P. a. vieiræ.	
C	Cinclus c. pyrenaicus.	C. c. cinclus.	C. c. cinclus.	
C	Picus v. virescens?	P. v. sharpei.	P. v. sharpei.	P. v. sharpei.
C	Dryobates m. pinetorum.	D. m. hispanus.	D. m. hispanus.	D. m. hispanus.

Portugal. In the preceding table I have set out a comparison of the geographical races of some of the resident species in these two regions, the Cantabrian Mountains and the Pyrenees.

It will be seen that of these: (*a*) three are the same in the Pyrenees, Cantabrians, and north Portugal, and that all these three are different in south Spain; (*b*) five, the same in the Pyrenees and Cantabrians, are different in Portugal; and (*c*) six, the same in the Cantabrians and Portugal, are different in the Pyrenees.

Those under (*b*) and (*c*) especially form a puzzling mixture of forms. While I have no satisfactory explanation of these apparent anomalies to offer, it may be of some interest to point to the following considerations. The Cantabrian Mountains are practically continuous with the Pyrenees and spurs of the chain run down from its western end into north Portugal. Thus there seems no definite isolating barrier between northern Portugal and the Pyrenees. Yet in group (*b*) we have four races (Blue Tit, Crested Tit, Robin, and Stonechat) which are distinctly more richly coloured and darker and two of them smaller in Portugal than in the Cantabrians and Pyrenees, while another (Nuthatch) is less richly coloured but also smaller. In group (*c*) we have four birds (Jay, Goldfinch, Coal-Tit, and Dipper) in Portugal and the Cantabrians which are distinctly darker (and in the Goldfinch and Coal-Tit smaller) than those in the Pyrenees.

In studying these differences all possible factors should be considered, and as it has often been stated that humidity plays a part, I subjoin a table of the values of the relative humidity at various stations, which has been most kindly supplied to me by the Meteorological Office, Air Ministry. The figures in this table indicate the ratio of aqueous vapour in a measured volume of air to the amount which the volume would contain if the air were saturated. The figures for each month have been supplied, but as the monthly variations at the different stations are fairly similar I give only the yearly mean.

Values of Relative Humidity in per cent. at various European Stations.

	Annual Mean.		Annual Mean.
Bergen (W. Norway)	77	Bagnères-de-Bigorre (about centre of N. side Pyrenees)	71
Christiania (S. Norway)	73	Oviedo (Asturias, N. Spain, near Picos de Europa)	79
Berlin (Germany)	75	Pontevedra (Galicia, west coast, N. Spain)	75
Hamburg (Germany)	81	Lisbon (Portugal)	70
Dunkirk (N.W. France)	75	Gibraltar	75
Aberdeen (E. Scotland)	80	Seville (S. Spain)	62
Kew (England)	79	Malaga (S.E. Spain)	65
Falmouth (S.W. England)	83	Madrid (Central Spain)	64
Valentia (S.W. Ireland)	84	Barcelona (N.E. Spain)	68
Munich (Bavaria)	80		
Paris (France)	74		
Bordeaux (S.W. France)	75		

While this table certainly shows that the middle and eastern side of Spain is dryer than the Atlantic side and the north, I think it will be agreed that it does not assist us in the problems presented in the distribution table given above, nor indeed in a comparison of British and Continental races.

It may be very true to say that we do not yet know what are the environmental factors which may produce a change in the coloration of a bird, but I think proof must be given before we can state that a difference is due merely to environmental causes acting upon each individual after its birth.

Beebe's experiments certainly prove that an individual bird does become darker in successive moults when subjected, under certain conditions, to a very humid atmosphere, but unfortunately his experiments stopped at this point. He did not breed birds in these conditions.

Dr. Lowe, in his stimulating paper on species and subspecies (Ibis, 1922, p. 185), mentions the case of the Bermuda Goldfinch, and holds that its distinctive coloration would not be inherited. If this is really the case, then it seems necessary also to believe that the dark pigment is increased so rapidly that each individual attains the distinctive difference of the race at all events when it moults its juvenile

plumage (say two or three months after hatching), and in some cases even when it attains its juvenile plumage, ten days or so after hatching. Beebe's experiments, on the other hand, show that the change in the individual is gradual; and this may be so in certain birds in a state of nature, but in such cases the variation among individuals, according to their age, would be so great that we should certainly not accept the differences as sufficiently constant to constitute a good form. To make my meaning clearer, the Bermuda Goldfinch must have shown its distinctive characters in the very first brood hatched in the island if Dr. Lowe's explanation is to be accepted. If, on the other hand, the whole race, as apart from individuals, has changed gradually, then surely this must have been due to something which was transmissible.

In the following list a dagger mark is affixed to those birds which we identified but did not obtain.

†Corvus corax.

Ravens were seen or heard nearly every day, but they were not plentiful. I have seen no skins from north Spain or Portugal, so cannot say if they belong to the form *hispanus*, which inhabits south Spain.

Corvus corone corone L.

Common and usually in family parties. One obtained is exactly like typical birds.

Garrulus glandarius fasciatus Brehm.

Garrulus glandarius kleinschmidti Hartert, Vög. pal. F. i. p. 30.

Jays were common in all the woods. Six obtained agree with this form, as do Portuguese birds. Although not a very distinct form, it is decidedly darker on the upper-parts in a series than the typical bird, has usually a well-defined dark (blackish) upper-breast, broad streaks on the crown, and a thick and deep bill. These characters *as a whole* differentiate it well. The wings of a series from Spain and Portugal measure: 9 males 176–189, 10 females

171–194 mm., thus agreeing as nearly as possible with *G. g. glandarius*.

†**Pyrrhocorax pyrrhocorax** (L.).

Choughs were very common and often in large flocks. We did not shoot any, but all those we saw near enough to identify had red bills. Often, however, they fly at too great a height to distinguish the species. Irby states that the Alpine Chough is common in the higher mountains.

Carduelis carduelis weigoldi Reichenow.

The Goldfinch was fairly common in small flocks, more especially at Panes. This form was described from Portugal, and is the resident bird on the west side south to Algeciras. It is interesting to find it also along the north coast. The eastern half of Spain appears to be inhabited by *C. c. africana*, which has well-marked differences. *C. c. weigoldi* is nearest to *parva*, from which it differs by being of a darker shade of olivaceous-brown on the upper-parts, sides of breast, and flanks. The wings of a series of twenty-four from Algeciras, Portugal, and the Cantabrians measure 70–79 mm., or exactly the same as *parva*.

Carduelis spinus (L.).

We saw a small flock of Siskins, and shot two in some alders at Panes on 16 October. These were doubtless migrants, and Mr. W. C. Tait tells me (*in litt.*) that they have been plentiful this autumn in Portugal.

Carduelis cannabina mediterranea (Tschusi).

Linnets were fairly common, and two which we obtained were, judging by size (wings 75–6) of this form, as apparently are the Linnets in the rest of the Peninsula.

†**Serinus canarius serinus** (L.).

Common.

Pyrrhula pyrrhula subsp.

A young bird just starting to moult from the juvenile plumage was obtained near Potes on 11 October. This was

the only Bullfinch we saw, but I thought I heard one once at Riaño. Judging by this juvenile, the bird must breed in the district, though it is certainly scarce. Irby found it near Potes.

†**Fringilla cœlebs cœlebs** L.
Abundant.

Petronia petronia petronia (L.).
A juvenile in full moult (including the wings and tail) was obtained at Riaño on 25 September and others were seen there, but the bird was not common.

†**Passer domesticus domesticus** (L.).
Common.

†**Emberiza calandra.**
Corn-Buntings were seen near Leon, but not afterwards.

Emberiza citrinella citrinella L.

Emberiza cirlus L.

†**Emberiza hortulana** L.

Emberiza cia cia L.
The Yellow Bunting was rather more common than the Cirl, and as Irby found it common in May and June, it must be a resident in this district. Farther south in the Peninsula it is, I believe, not known to breed. In the valley at Riaño we saw a good many Ortolans, but not elsewhere. Rock-Buntings were fairly common.

Lullula a. arborea (L.).
Wood-Larks were not uncommon, but by no means as numerous as they are in many other parts of Spain and Portugal. These and others from the Peninsula are inclined to be grey on the upper-parts; but they vary, and the forms of Wood-Lark (*L. a. harterti* and *L. a. familiaris*) which have been separated seem to me very unsatisfactory.

Alauda arvensis arvensis L.

One obtained at Panes on 18 October is of the typical form, but may have been a migrant. We saw a few at Riaño one day in a field, but as there were a number of people working there and the Larks were rather wild we did not manage to get any. Irby mentions them as common at Potes in May and June, but we did not see the bird there.

Owing to probable immigration, it would be necessary to obtain birds in the summer to make sure of the race to which the breeding birds belong, and this would be an interesting point to clear up in view of the local races found in Portugal.

Anthus t. trivialis (L.).

Anthus pratensis (L.).

Meadow-Pipits were fairly common, even at the end of September when we reached the district, but these were, I suppose, immigrants, as Irby did not see them at Potes in May and June. There were a good many Tree-Pipits at Riaño, but we saw none at Potes or Panes, but they may have left by 6 October, when we arrived at Potes. From Irby's observations it appears to breed.

†**Motacilla cinerea cinerea** Tunst.

Motacilla alba alba L.

Both Grey and White Wagtails were common on the streams. We saw no *M. flava* of any kind.

Certhia brachydactyla ultramontana Hartert.

Tree-Creepers were common.

Sitta europæa cæsia Wolf.

Nuthatches were fairly common and we obtained a good series. These have not the small bill and pale under-parts of *S. e. hispaniensis*, which is found in middle Spain and Portugal. They match *cæsia* in size and colouring, though the under-parts are seldom so richly coloured as the darkest examples of *cæsia*.

Parus major major L.

Great Tits were common. The characters used in separating some of the European forms of Great Tit are so variable individually as to make the distinctions of race of very little value. The series we obtained match typical birds exactly in coloration, while those from Portugal and south Spain are slightly darker and duller. The white wedge on the inner web of the outer tail-feathers is in most of the specimens large as in *P. m. major*, but in two or three examples it is restricted. In Portuguese birds about two-thirds have this wedge much restricted. The bills measure 11–12·5 mm., most being slightly longer than they are in the typical form and of exactly the same size as Portuguese and south Spanish birds. These differences, however, are slight and variable, and I think Portuguese and Spanish Great Tits should all be called *P. major major*.

Parus cæruleus cæruleus L.

Blue Tits were not very common at Riaño, but were more plentiful at Potes and Panes. The series we obtained were of the typical form and very distinct from the smaller, darker, and more brilliant *P. c. harterti*, which inhabits Portugal southwards to Algeciras.

Parus ater vieiræ Nicholson.

While the Nuthatch, Blue Tit, and Crested Tit were unlike the forms found in Portugal, the Coal-Tit was of this distinct Portuguese subspecies. Curiously enough we found the bird only at Riaño. At Potes and Panes we saw none. One cannot, of course, be certain that it was absent from these localities, as all birds, even the Tits, were very silent, but should subsequent observations show that there really is a gap hereabouts in the distribution of the Coal-Tit, a very interesting point will be established, as the form found in the Pyrenees, even on the Spanish side, is *P. a. ater*. (Irby states that Lilford once observed a Coal-Tit near Santander.)

P. a. vieiræ is somewhat like *P. a. britannicus*, but the

rump and flanks are less olivaceous and more rusty-buff, and sometimes the whole under-parts are buff as in the type-specimen, which was at one time thought to be an aberration. The cheeks are usually tinged with yellowish-buff. In the juvenile the sooty-black of the throat extends, as it does in *P. a. ater*, farther on to the breast than in *P. a. britannicus*, but the under-parts are very different from either in tone of coloration, being considerably buff and not so yellow. The wings of a series of adults (9 males, 4 females) from Portugal measure: males 57–59, females 53–56 mm. Those from Riaño (4 males, 3 females) measure: males 58–60, females 59 and one 62. The last is larger than any Portuguese Coal-Tit I have seen, but in colour it is typical *vieiræ*.

Parus cristatus mitratus Brehm.

Crested Tits, which we found common at Riaño, were much scarcer on the lower ground about Potes and Panes. They were all of the central European form. In Portugal and as far south as Algeciras *P. c. weigoldi* is found, and one bird which I got at Vigo is of this form, as is one from Arosa Bay collected by Surgeon-Admiral Stenhouse, though this is not very typical. I have recently given the distinctions of *P. c. weigoldi* (Ibis, 1921, p. 581), and I may add that the colour of the upper-parts varies somewhat and in some examples is considerably tinged with rust-colour.

Parus palustris communis Baldenstein.

Although Irby mentions the Marsh-Tit as occurring in this district I was surprised to find it comparatively common in the more open parts of the woods near Riaño and Potes, while at Panes it was scarcer. Marsh-Tits from the Peninsula are not represented in any of the collections I have examined, and of recent years its presence in Spain has been regarded as somewhat mythical, notwithstanding Irby's record and Saunders's statement (Ibis, 1871, p. 208) that the bird occurred near Granada and Cordova in spring. In 1919 I obtained one on the Spanish side of the Pyrenees, but this

was in juvenile plumage and could not be assigned to any race. But in the Cantabrians we obtained a series of sixteen in fresh plumage. I have carefully compared these with other Marsh-Tits, and cannot separate them either by colour or by size from series of *P. p. communis* and *P. p. longirostris*. These two forms intergrade so much that I think their distinctions cannot be upheld, and I have therefore adopted the older name *communis*.

Ægithalos caudatus taiti Ingram.

Long-tailed Tits were fairly common and we obtained a good series. A careful comparison of these with good series of Portuguese and Pyrenees birds leads me to the conclusion that they are all the same. I can find no constant difference either in colour or size. This being so, *Æ. c. pyrenaicus* must be regarded as a synonym. The black stripes on the sides of the crown sometimes meet on the forehead and sometimes do not, but they are decidedly broader than in the British bird, to which this form is most akin, while *taiti* has also less pink on the mantle and back, and has a yellow eyelid and orbital ring in the adult. I have not seen specimens of Long-tailed Tits from south of Coimbra in Portugal, and it will be interesting to find the exact range of the very different *Æ. c. irbii*.

Regulus ignicapillus ignicapillus (Temm.).

Fire-crests were fairly common. We saw no Goldcrests. Irby does not mention either species.

Muscicapa hypoleuca hypoleuca (Pall.).

Pied Flycatchers were to be found here and there in the woods at Riaño and Potes, and must, I think, have been the breeding birds of the district (Irby notes it as common in summer), though the adults were all in winter plumage. They were of the typical form and not *M. h. speculigera*, which we had found breeding the year before on the south side of the Serra da Estrella in Portugal. Spotted Flycatchers (*M. striata*), which Irby mentions, had apparently left by the time we arrived as we saw none.

Phylloscopus collybita collybita (Vieill.).

Ph. trochilus trochilus (L.).

There were a few Chiffchaffs at Riaño and Potes and a good many about Panes, this difference in numbers being perhaps due to altitude. It seems probable that a certain number winter near the coast as they do in Portugal. We did not hear the song, so I am unable to say if it is of the peculiar character of the Chiffchaffs of Portugal and south Spain.

We shot a Willow-Wren at Riaño on 25 September, but did not identify it elsewhere. Irby mentions it as common in May and June, and I think it is not known to breed south of this district. He also states that Bonelli's Warbler was common, and gives a record of the Wood-Wren on 16 May, but we saw neither of these species.

Cettia cetti cetti (Temm.).

Cetti's Warbler was fairly common at Panes, and we obtained two specimens which are typical. We did not observe the bird elsewhere.

†**Hypolais polyglotta** (Vieill.).

We saw a few Melodious Warblers at Riaño and Panes.

Sylvia borin (Bodd.).

S. atricapilla atricapilla (L.).

†**S. communis** Lath.

These species were present, but in very small numbers.

Turdus viscivorus viscivorus L.

The Mistle-Thrush was common, especially on the borders of the higher woods. The two specimens we obtained are greyer on the upper-parts than a series of British birds, but some from Germany and Switzerland are equally grey and this is a variable character.

Turdus philomelus philomelus Brehm.

Song-Thrushes were rather scarce at Riaño, but commoner at Potes and Panes. The five collected are like typical birds,

though inclined to be rather dark. Irby states that the species is common and breeds. Chapman and Buck found it singing in the Sierra de Gredos in mid-May, which points to its nesting in that district.

Turdus merula merula L.

Blackbirds were common. These, as well as a series from Portugal, I cannot distinguish from the typical form.

† Monticola solitarius.

We saw a Blue Rock-Thrush in a defile between Riaño and Cangas de Onis, but they were certainly not common in the district.

Œnanthe œnanthe œnanthe (L.).

The only Wheatears we saw were a few of the common species.

Saxicola rubetra rubetra (L.).

Saxicola torquata rubicola (L.).

Whinchats were decidedly scarce and Stonechats not very common. Three of the latter obtained are, I consider, *rubicola* ; they are rather darker on the upper-parts than is often the case in this form, but still not so dark and rufous as the British form, which also inhabits Portugal.

Phœnicurus phœnicurus.

Ph. ochrurus gibraltariensis (Gm.).

We saw a very few Common Redstarts at Riaño only, and I think that most had migrated as Irby considered them common. The only bird obtained had the 2nd primary in one of its wings broken off and in the other growing, so that it was impossible to say if its wing-formula was like that of *Ph. ph. algeriensis*, which we had found to be the case in two breeding birds collected in Portugal in the summer of 1920.

The Black Redstart was often to be seen amongst buildings, and was very common on the higher rocky ground, especially about Riaño.

Erithacus rubecula rubecula (L.).

Robins were abundant in all the woods, and eight obtained are like the typical form, while Portuguese birds are like the British *E. r. melophilus*.

Prunella modularis modularis (L.).

Hedge-Sparrows were scarce and had a liking for high ground where there were small bushes, though we also saw a very few lower down near Panes. In Portugal we also found a number high up on the Serra da Estrella, but they were also present quite low down near Oporto. Three which we shot at Riaño and Panes are not quite so dark as Portuguese birds, which have been separated as *P. m. obscura*.

Troglodytes troglodytes troglodytes (L.).

Wrens were not at all common. They are of the typical form as are Portuguese birds.

Cinclus cinclus cinclus (L.).

Dippers were very abundant on all the streams from about 3500 ft. at Riaño to nearly sea-level at Panes. We collected a large series, which I have very carefully compared with equally good series of *C. c. pyrenaicus* and *C. c. cinclus*, and find that these Cantabrian birds are indistinguishable from the Scandinavian. *C. c. pyrenaicus* is certainly very nearly allied and there is slight individual variation, but the series of autumn skins of *C. c. pyrenaicus* at Tring is so good that I have no hesitation in stating that the Cantabrian birds are distinctly darker (black-brown) on the crown, mantle, and back. As in *C. c. cinclus* and *C. c. pyrenaicus*, there is sometimes a little dark chestnut on the belly, which is otherwise very black. This surprising result provides an interesting problem, especially in conjunction with the fact that the few skins available of Dippers from the Sierra Guadarrama in middle Spain and the Sierra Nevada in south Spain seem indistinguishable from *C. c. aquaticus*, a form with much paler upper-parts and a chestnut belly, which inhabits France and Germany. We thus have in Spain two "repetitions" of forms separated geographically by other forms. The

Dipper found in the north of Portugal, of which I have four specimens kindly given to me by Mr. Tait and Senhor Lopes, does not differ from the Cantabrian birds.

† **Hirundo rustica.**

† **Delichon urbica.**

We saw a few Swallows passing over at Riaño and a few with House-Martins at Potes on 7 October, but the breeding birds had left before we arrived.

† **Alcedo atthis ispida** L.

We saw one or two Kingfishers on the main streams at Riaño, Potes, and Panes.

Picus viridis sharpei (Saunders).

Green Woodpeckers were fairly common, but very shy and difficult to get. Three which I shot have the sides of the neck and upper-breast not so grey as is often the case. They are, however, like the type specimen which came from near Madrid. Unfortunately most of the specimens in the British Museum have no date, but I fancy the greyness is produced by wear, and probably the more green and less grey birds are freshly moulted autumn ones. Three autumn birds, which Mr. Tait has sent me from north Portugal, agree with my Cantabrian ones. The wings of a series of nine males measure 157–164 mm. or about the same as *P. v. virescens*, but the bills are rather smaller, measuring in the males 41–46 and in eleven females 40–43 mm. against ♂ 43–50, ♀ 43–48 in *P. v. virescens*.

Dryobates major hispanus (Schlüter).

There were a few Great Spotted Woodpeckers in the woods near Riaño and Potes, but we did not notice the bird at Panes. We obtained only two. These, and three others which Mr. Tait has sent me from Portugal, have the tail-feathers closely barred (thus showing less white than in *D. m. pinetorum*), while the under-parts are dark, though sometimes examples of *pinetorum* have equally brown under-

parts. The white spots on the secondaries are not so restricted as they are usually in specimens from southern Spain.

Dryobates medius lilianæ.

Dryobates medius lilianæ Witherby, Bull. B. O. C. vol. xlii. 1922, p. 49.

The Middle Spotted Woodpecker was fairly common at Riaño and Potes, but we did not see it at Panes, which is perhaps at too low an elevation, though at Potes it was fairly common in a valley only about 1500 ft. above sea-level. We found that it was especially fond of walnut-trees. It was much more confiding than other Woodpeckers, and we twice saw one searching rotting timbers in the roof of a house. Irby mentions it as abundant near Potes, but since his time the presence of the Middle Spotted Woodpecker in any part of the Spanish Peninsula seems to have been lost sight of. It is not known to inhabit the Pyrenees, and its absence between the Alps and the Cantabrians forms a gap in its distribution which may account for the differentiation of the Cantabrian form which I have described elsewhere. It may be found in other parts of Spain, as Saunders, on the authority of Guirao, says it is common in Murcia (Ibis, 1871, p. 66).

Strix aluco sylvatica Shaw.

We saw a few Tawny Owls and obtained two at Riaño, but did not see or hear any Owls elsewhere. They are, however, easily overlooked, and all birds as I have already mentioned were very silent.

Tawny Owls from the Spanish Peninsula are, I think, like the British form, though more specimens should be examined before we can be sure. Mr. W. C. Tait has very kindly sent me six from Portugal. The wings of these measure :— four males 250, 255, 260, and 268 mm., and two females 265, 268, while the two females from Riaño measure 260 and 265. In size therefore they are like *sylvatica*, and only the one male reaches my measurements (males 265–290,

females 270–305) of *S. a. aluco*. In colour one of those from Portugal is very black and grey (a type which is very rare indeed in Great Britain), three others are rather browner, and two are rufous. Of the Cantabrian birds one is rufous and the other grey-brown.

†Falco tinnunculus.

Kestrels were fairly common, but except for these and Common Buzzards, Hawks were very scarce. A large Falcon seen in the distance above some rocky hills near Potes was probably a Peregrine.

Buteo buteo buteo (L.).

Common Buzzards were fairly plentiful especially at Panes, but we did not identify any Honey-Buzzards, which Irby found common in summer in the Potes district. An adult male *B. b. buteo*, which I shot, has a considerable amount of rufous on the tail, and the wing measures 375 mm.

Accipiter nisus nisus (L.).

We saw two or three Sparrow-Hawks at Riaño and at Potes, but they seemed to be very scarce. An adult female, which I shot at Riaño, has the upper-parts very dark grey without a tinge of brown, while the under-parts have close and very dark bars.

†Milvus milvus.

We saw only one Red Kite (at Riaño) and no Black Kites.

†Ciconia ciconia.

There is a single Stork's nest at Riaño, but the birds had left before we arrived.

†Columba palumbus.

We saw a few Wood-Pigeons and were told that they were very numerous in some autumns.

†Vanellus vanellus.

Two Lapwings at Riaño on 27 September were the only ones we saw.

†Tringa hypoleuca.

We saw a few Common Sandpipers on the river at Riaño and also at Panes. Chapman and Buck state ('Wild Spain,' p. 181) that they found a nest and four eggs on 23 May in the province of Santander, but the exact locality is not given.

†Alectoris rufa.

†Perdix perdix.

We occasionally heard a Red-legged Partridge (probably of the form *A. r. hispanica*), but never put one up, and I think they must be very scarce, as we offered a good price to the local sportsmen for Partridges of any kind and were not able to obtain any.

I saw three Grey Partridges (probably *P. p. hispaniensis*= *charrela*) near Riaño, but unfortunately missed them with both barrels. These birds were at the base of a rocky peak on a steep grassy slope above the woods. When put up they flew very low round the curve of the mountain, and after being shot at took refuge on a small slope, where there was a little grass among the rocks. From there they flew round to the other side of the mountain, where I was unable to follow without making a long detour far down into the valley and up again. The low, curving flight of the birds and the ground they inhabited reminded one more of Ptarmigan than Grey Partridge, but both here and in the Pyrenees these Partridges frequent the high ground. They seemed to be very scarce, for these were the only ones we saw, and I toiled over much apparently suitable ground in the hope of finding more.

†Coturnix coturnix.

We heard Quails occasionally at Riaño, and saw half-a-dozen shot there by local sportsmen.

XX.—*Obituary.*

John Kirk.

The death of Sir John Kirk, G.C.M.G., F.R.S., which took place on the 15th of January last at his home at Sevenoaks, removes from our midst one of the most distinguished of the men of British birth who during the last century opened up the interior of Africa and added large areas of that continent to the British Empire. Though never a member of the Union, he did a good deal of work for ornithology, and it is not meet that his death should pass unnoticed in the pages of 'The Ibis.'

Born in the manse at Barry, near Arbroath in Forfarshire, on the 22nd of December, 1832, he was the second son of the Rev. John Kirk of Arbirlot. He was educated at Arbroath and at Edinburgh University, where he graduated M.D. and L.R.C.S. in 1854. His love of natural history was early developed, and he was already a botanist of considerable note. In 1855 he served for a time under the War Office, and was assistant physician at a hospital at Renkioi on the Dardanelles, to which many of the sick and wounded from the Crimea were sent. In 1858 he was appointed physician and naturalist to Livingstone's second expedition. He soon became Chief Officer under Livingstone and spent five years exploring the lower reaches of the Zambesi, and with his chief was the discoverer of Lake Nyasa and Lake Shirwa, and with him became the founder of the present Protectorate of Nyasaland. He returned home in 1863, and spent some time at Kew identifying and describing his botanical collections. The birds collected during these five years were described by himself in 'The Ibis' (1864, pp. 307–339), while another collection made in the Comoro Islands was enumerated by Dr. P. L. Sclater in the same volume (pp. 292–301) and included a number of valuable notes from Dr. Kirk as he then was.

In 1866 Kirk was appointed acting-surgeon to the political

agency at Zanzibar. He soon rose to become Consul-General, and it was through the influence he exercised over the Sultan, Sayyid Bargash, that he became the arbiter and virtual sovereign of the dominions of Zanzibar, which extended over the greater part of eastern Africa. Though he did little more collecting himself, he sent collectors to Lamu, Melindi, Usambara, and Ugogo, and himself again visited the Comoro Islands. The birds obtained on these occasions were worked out by the late Capt. Shelley (Proc. Zool. Soc. 1879, p. 673, and 1881, p. 561). He also assisted in every way the many British travellers and scientific explorers, such as Sir Joseph Thomson, Sir Harry Johnston, and Stanley, who made Zanzibar the base of their operations. His political and antislavery work needs no mention here.

After his retirement in 1887 Sir John Kirk made several other journeys to Africa, the last one on the completion of the Uganda railway, when he was conducted in state up to Lake Victoria, which was only discovered by Speke in the year in which Kirk first went to Africa.

Many honours came to Kirk: he was created G.C.M.G. in 1886, was elected a Fellow of the Royal Society in 1887, and was Foreign Secretary of the Royal Geographical Society from 1894 till 1911, when he resigned at the age of 80. He also received honours from Oxford and Cambridge, as well as from his own University of Edinburgh. Many animals and plants bear his name, which has been attached to birds of the genera *Crateropus, Cinnyris, Francolinus*, and *Zosterops* among others.

Of quiet and unassuming manner, Sir John Kirk was none the less a man of firmness and courage. His sense of humour and kindliness endeared him to all those who had to do with him, and he will always be remembered as one of the greatest of public servants who have made the name of Englishmen or, better, Scotsmen respected throughout the world.

John Biddulph.

The death of Colonel John Biddulph, which occurred on the 24th of December last at Grey Court, Ham Common, in his 82nd year, removes a name very familiar to the Indian ornithologists of the Hume era. He was a member of the Union from 1875 to 1892, when he resigned.

One of a distinguished family, the third son of Robert Biddulph of Ledbury, John Biddulph was educated at Westminster, and at the age of 18 joined the 19th Lancers and proceeded to India in time to serve through the Oude campaign of 1858 and to be awarded the Mutiny medal. He afterwards joined the Political Department under the Government of India. He accompanied the second Yarkand mission of 1873–1874 under Sir Douglas Forsyth and in company with Dr. F. Stoliczka, who was the official naturalist and who unfortunately died during the crossing of the Himalaya on the return of the mission to India.

The Scientific Results of the Mission were published by the Government of India in a series of memoirs. That containing the account of the Birds, owing to Stoliczka's death and other causes, did not appear until 1891. It was prepared by Dr. Bowdler Sharpe, and in it will be found incorporated the MSS. notes of Colonel Biddulph, who collected assiduously both birds and mammals and discovered a new species of that curious genus *Podoces*, allied to the Choughs and confined to Central Asia, to which Hume attached his name. In 1877 Biddulph was posted at Gilgit, the furthermost outpost of India, in the extreme north-western corner of Kashmir. Here with short intervals he remained till 1881 and made very considerable collections of birds. His observations and researches in this remote region are contained in two very valuable papers published in 'The Ibis' (1881, pp. 35–102, and 1882, pp. 266–291), and but little work on birds has been done in the Gilgit region since that date. After holding many posts as Resident at various Native States and serving for four years on the staff of the

Viceroy Lord Northbrook, Colonel Biddulph retired from the service in 1895.

In addition to his natural history tastes, Biddulph was a keen numismatist and had got together a remarkable series of ancient Indian weapons. He was also the author of several works, the result of original research, including 'The Tribes of the Hindoo Koosh,' 'The Nineteenth and Their Times' an account of the four British Cavalry Regiments which have borne that number, and a monograph on 'Stringer Lawrence' known as the father of the Indian Army.

His valuable collection of Indian birds, numbering some 3500 skins including those from Gilgit and Turkestan, were presented by him to the National Collection.

William Willoughby Cole Verner.

We regret to learn of the death of Colonel Willoughby Verner, which took place at his residence El Aguila, Algeciras, in southern Spain on 25 January last. He was well-known for his knowledge of Spanish ornithology, and became a member of our Union in 1881.

Born in 1852, he joined the Rifle Brigade in 1873 and passed through the Staff College, taking the first place with honours in 1881. He served in the Nile campaign of 1884, was present at Abu Klea, and subsequently at the fighting on Gordon's steamers at Metemneh. He also saw active service in South Africa in 1899–1900, when he was on the staff, and was wounded at Graspan, after which he retired and devoted himself to literary and natural history pursuits, spending much of his time in southern Spain. His book, 'My life among the Wild Birds of Spain,' was published in 1909 and reviewed in 'The Ibis' of the same year (p. 381) at considerable length. Though an excellent sportsman and devoted to shooting and wild-fowling, his bird-work was mostly performed with the telescope and camera, and with a facile pencil he himself illustrated his book with charming drawings. He had a considerable

collection of eggs taken by himself in the sierras and lagunas of Andalucia. Of late years he had devoted himself to the exploration of the palæolithic caves and rock-paintings of Andalucia, and was preparing a report on this subject in collaboration with the well-known Abbé H. Breuil of the Institut de Paléontologie humaine in Paris. He also wrote a good many books on military history, including 'The Military Life of Field-Marshal H.R.H. the Duke of Cambridge,' 1905, and the 'History of the Rifle Brigade,' the first volume of which appeared in 1912, and the second so lately as November of last year.

Colonel Verner was a most versatile man. He was an accomplished soldier, a good scholar both in the Portuguese and Spanish languages, a writer of considerable literary charm, an inventor, and an excellent field-naturalist and sportsman.

He married in 1881 the Hon. Elizabeth Mary Emily Parnell, daughter of the third Baron Congleton, who survives him together with a daughter, the widow of Commander Robert Jeffreys, R.N. His only son, Commander Rudolf Verner, R.N., was killed during the war.

Brigadier-General H. R. Kelham, C.B., has sent us the following reminiscences of Colonel Verner:—

"We first met as young subalterns at Gibraltar in 1875, he being there at that time with his regiment, the Rifle Brigade. In those happy days there were no shooting restrictions in Spain; as long as you held a Government Game Permit you could shoot where you liked, so many a good day did we have 'between rivers,' in the Cork Woods or further afield at the Laguna de la Tanda and its snipe-marshes, and well do I remember Verner's delight at our discovering several Grey Phalarope (*Phalaropus fulicarius*) on the edges of that lagoon.

"His whole life was devoted to birds, even on active service he was always on the look-out for a new bird, as may be seen in his account of how he secured a nest of the Black and Red Weaver-bird while under heavy fire during the Nile Campaign.

"While at the Staff College Verner always seemed to find time for birds, as a fellow-student remarked: 'While we spend all our time out of lecture hours working like mad, Verner goes off climbing trees after birds' nests.'

"In fact he was a man of such natural talent and quickness that to him examinations were no terror, and in spite of time spent climbing trees after nests he passed out nearly, if not quite, at the top of the list.

"Very clever with his pencil and a talented surveyor, he served during the early days of the South African War as official topographer, but at the battle of Graspan while galloping over the veld his horse fell and crushed him so badly that he had to be sent home, his injuries eventually resulting in his having to retire from the army.

"After his soldiering, Colonel Verner returned to his first love, Spain, building himself a house at Algeciras where he spent each winter within easy reach of La Tanda and the happy hunting grounds of his youth; here he wrote most of his book: 'My Life among the Wild Birds of Spain,' a most interesting record of the life of a gallant gentleman, good sportsman, and enthusiastic ornithologist."

John Patricius Chaworth-Musters.

Mr. Chaworth-Musters died on the 12th of December, 1921, at Annesley, the ancient family seat near Nottingham. He was a member of the Union from 1900 to 1917.

Born in 1860, Mr. Chaworth-Musters was the great-grandson of Mary Anne Chaworth, Byron's early love and near neighbour. He was educated at Eton and Christchurch, and succeeded to the family estates in 1887 on the death of his father. He was a country gentleman, interested in farming and sport, and an enthusiastic ornithologist. He formed one of the largest private collections of birds' eggs in the country. He was the father of seven sons and four daughters. Six of his sons served in the war, and three were killed or died of wounds.

XXI.—*Notices of recent Ornithological Publications.*

Baker on Indian Game-Birds.

[The Game-Birds of India, Burma and Ceylon. By E. C. Stuart Baker. Vol. i. Ducks and their Allies, pp. xvi–340; 30 col. pls., 2 black & white pls. Vol. ii. Snipe, Bustards and Sandgrouse, pp. xvi–328: 19 col. pls., 6 black & white pls.; 2 maps. London (The Bombay Natural History Society), 1921. 8vo.]

In 1908 the Bombay Natural History Society published in book form a series of articles, which had been appearing in their Journal, on "Indian Ducks and their Allies," by Mr. E. C. Stuart Baker.

Within a year or so the volume was out of print, and Mr. Baker and the Society have been well advised to bring out a new edition of this useful work, after thoroughly revising it and bringing it up to date. The title of the book has been changed from "Ducks and their Allies" and now forms volume i. of 'The Game-Birds of India, Burma and Ceylon,' rather an unfortunate change and apt to cause confusion with Hume and Marshall's well-known work.

The re-arranging of the letterpress under headings, and the substitution of several new plates by Mr. Grönvold, for indifferent ones in the first edition, are great improvements, but the same cannot be said of the way some of the old plates have been reproduced: that of the Ruddy Sheldrake for instance is poor in colour, while the bird flying in the background seems to have been deprived of its eye!

The second volume of the series contains rather a heterogeneous lot of birds, viz.: Snipes, Bustards and Sandgrouse. These Mr. Baker treats in a thorough manner and besides giving descriptions and distribution adds full details in regard to eggs and nesting, as well as information of interest to the sportsman such as accounts of shooting, record bags, etc.

Admirable black and white plates by Mr. Grönvold show the differences in the heads and bills, under wing-coverts

and tails of the various species of Snipe, which used in conjunction with the useful key, ought to enable anyone to identify a bird he has shot.

In regard to the habits of the Great Bustard and the Eastern Little Bustard the author has of necessity had to draw on European works, since the former is of very rare occurrence in India and the latter, though a regular visitor, has not been much written about. Of the remaining Bustards, more especially the Bengal Florican, *Sypheotis bengalensis*, complete accounts have been given and we are surprised to find that apparently the chick of that species does not appear to be known.

In spite of his having no personal experience of Sandgrouse in their native haunts, Mr. Baker has produced very readable articles on the different species, though we cannot altogether agree with his systematic treatment of the different forms. In reference to the distribution of *Pterocles orientalis* we should like to point out that the Saiar Mts. are not in the extreme south of Palestine but in Turkestan.

A systematic index at the beginning of each volume or a detailed list of contents should be added in a new edition, since at present it is impossible to find out what species are mentioned in the volume without hunting through the index at the end.

It is unfortunate that a little more attention has not been paid to the synonymy and that the type localities, curiously enough omitted from most of the species described from India, while the dates of all original descriptions have not been given.

Both to the working ornithologist and sportsman in India these two volumes should be very useful, and we shall look forward to the concluding volumes of the series.

Bangs on Chinese and Burmese Birds.

[The birds of the American Museum of Natural History's Asiatic Zoological Expedition of 1916–1917. By Outram Bangs. Bull. Amer. Mus. N. H. xliv. 1921, pp. 575–612.]

An expedition under the leadership of Mr. Roy C. Andrews

and Mr. E. Heller was organized by the American Museum of Natural History during the years 1916–1917. Explorations were made in western Yunnan and the contiguous parts of Burma and also in Fokien in southern China. An interesting account of the expedition will be found in a volume, 'Camps and Trails in China,' by Mr. Andrews, published at New York in 1918. The primary object of the expedition was the collection of mammals, but a fair series of birds were obtained and are here listed. In the Yunnan list Mr. Bangs has made use of and followed Lord Rothschild's recent paper (Nov. Zool. xxviii. 1921, pp. 14–67). The list contains some taxonomic notes, but apparently Mr. Andrews made no field-observations which would certainly have added interest to the paper. New forms described are:—*Pericrocotus yvettæ*, *Turdus auritus conquisitus*, and *Megalurus palustris andrewsi*, all from Yunnan or the Burma-Yunnan border; while a new name, *Rhipidura flabellifera placabilis*, is suggested to take the place of *R. f. kempi* Math. & Iredale from New Zealand 1913, nec *R. rufifrons kempi* Math. 1912!

Bannerman on the Canary Islands.

[The Canary Islands, their History, Natural History, and Scenery: an account of an ornithologist's camping trips in the archipelago. By David A. Bannerman, M.B.E., etc., etc. Pp. xvi+365; 3 col. pls., 4 maps, and many photographs. London (Gurney & Jackson), 1922. 8vo.]

All readers of this Journal are familiar with Mr. Bannerman's work on the birds of the Canary Island group. Now he has made an appeal to a wider audience by the publication of this attractive volume, in which he has combined his previous researches with a good deal of new matter. That he is amply fitted for his task is evidenced by the fact that he has made ten different visits to the group and has explored all the islands except Palma and Hierro in the extreme west.

The first chapter is devoted to an account of the discovery and early history of the archipelago, which appears to have been known to Carthaginians and Phœnicians long before the Christian era. In the dark ages all knowledge of the

Fortunate Islands appears to have been lost until early in the fourteenth century, when the Portuguese and the Spaniards began their voyages of discovery. Other chapters follow on the physical characteristics and geological history of the group, and we are glad to notice that Mr. Bannerman approves of the orthodox theory of their origin that they are of volcanic origin and have never been joined to the African Continent or formed part of the fabled Atlantis.

The second and third parts of the volume are devoted to the author's personal explorations and adventures in the various islands, and show him to be a traveller of the best type—always keen, always good tempered, often in very trying circumstances, and always observant, not only of the birds which were assiduously collected, but also of the other animals and plants. Finally an appendix contains a complete list of the Canarian birds, 217 in number.

The illustrations include three coloured plates of Canarian Titmice and Chaffinches, which are reprinted from those which appeared in 'The Ibis,' and a very large number of photographs, nearly all of them taken by Mr. Bannerman himself and beautifully reproduced for this work. The book is well printed on good paper and is a credit to the publishers, and we hope that it will meet with all the success it deserves. It will certainly be of the greatest interest to all visitors or residents in the Canaries, while no ornithologist should neglect the perusal of its fascinating pages.

Beebe on the Pheasants.

[A monograph of the Pheasants. By William Beebe. Vol. iii, pp. xvi+204; col. pls. xlv-lxviii; photogr. 40–60; maps xi–xiv. London (Witherby for the New York Zool. Soc.), February 1922. 4to.]

The third volume of Mr. Beebe's magnificent work on the Pheasants is now before us and fully sustains the standard set in the two previous ones. The present volume deals with four genera, all closely allied to the familiar "Bird of Colchis." These are *Pucrasia* containing the Koklass' of the Himalaya and China, *Catreus* containing

the Cheer confined to the Himalaya, *Phasianus* the true Pheasants, and *Syrmaticus* the Long-tailed Pheasants. So far as the first two of these genera are concerned there is no important change in the usually accepted taxonomy. As regards *Phasianus* Mr. Beebe considers that the genus should be restricted to two species only, *P. colchicus* and its numerous subspecies, and *P. versicolor* of Japan. Of *P. colchicus* he admits twenty-three subspecies as against Hartert's thirty, ranging from the shores of the Black Sea to Manchuria and Formosa, and he draws attention to the way in which these forms all grade into one another, so that mutation appears to have played but little part in their origin. There can be no doubt that the true Pheasants are a plastic group easily modified by their surroundings, and that they are also individually plastic, so that, even as Mr. Beebe remarks, within the space of two rice-fields of moderate size it is possible to shoot in a single morning three or four Pheasants which would, if obtained in distinct localities, have been considered distinct races. The last genus, *Syrmaticus*, has hitherto been restricted to Reeves' Pheasant; Mr. Beebe has withdrawn Sœmmerring's from *Phasianus*, and Elliot's, Mrs. Hume's, and the Mikado from *Calophasis* and placed them all together in this genus. He finds, notwithstanding the diversity of the plumage of the males, that they agree in a number of points, especially in the elongated central rectrices and the absence of the disintegrated rump-feathers so characteristic of true Pheasants; while the females have a good many similar characters, and show undoubted signs of a common origin. This rearrangement seems very satisfactory, and will probably be accepted by future writers.

It is, however, in the observations which Mr. Beebe was able to make himself during his memorable journey through Asia that the greatest interest will be taken. Under the caption "The Bird in its Haunts," he lets himself go in vivid word-pictures of the various homes of wild pheasants—the paddy-fields and reed-beds of central China, the flowery gorges of the Yangtse, the deodar forests of the

Himalaya, the dense bamboo jungles of the Burmese hills, and the smiling landscape of Japan were all visited, and are here described with their characteristic pheasants.

The coloured plates are reproduced from paintings by various artists. Those of the true Pheasants, eleven in number, are by the late Major H. Jones; they are in a rather different style to the others, the backgrounds and surroundings being conventional and the birds themselves occupying most of the plate; they are wonderfully exact reproductions of the colouring of the birds, but not perhaps so pleasing in an artistic sense as some of the others. To Mr. Lodge has fallen the four Koklass and four Long-tailed Pheasants, and we would give the palm to the Common Koklass which forms the frontispiece; the Mikado does not seem to be nearly so successful. There are two plates, Cheer and Elliot's, by Mr. Fuertes, and one each from Mr. C. R. Knight, and Mr. E. Megargee—Reeves' and Sœmmerring's; while Mr. Grönvold contributes a plate of the young birds of Reeves' and Elliot's. The photogravures illustrating the homes and haunts are mostly from photographs by Mr. Beebe himself, but there are some by General Bailward, Mr. Dwight Huntington, and Mr. Douglas Carruthers of regions in central Asia not visited by Mr. Beebe. One of the most beautiful of the camera pictures is the home of the Japanese Copper Pheasant (*S. sœmmerringi*), showing Mt. Fuji rising from a lake in the foreground.

Our only regret is that the high price of this beautiful work will prevent it having the wide circulation which it deserves, and we shall look forward to seeing before very long the fourth and concluding volume.

Cherrie and Reichenberger on new South American Birds.

[Descriptions of proposed new birds from Brazil, Paraguay, and Argentina. By George K. Cherrie and Mrs. E. B. Reichenberger. Amer. Mus. Novit. New York, no. 27, Dec. 1921, pp. 1–6.]

This contains preliminary descriptions of new forms contained chiefly in the Roosevelt collection made by

the senior author in 1913–16. They are as follows:— *Strix chacoensis, Ortalis canicollis pantanalensis, O. c. grisea, Nystactes tamatia interior, Nonnula ruficapilla pallida, Chloronerpes flavigula magnus, Furnarius rufus paraguayæ.*

Chubb's Birds of British Guiana.

[The Birds of British Guiana, based on the collection of Frederick Vasavour McConnell. By Charles Chubb. Vol. ii. pp. xcvi+615; 8 photographic plates, 10 coloured plates, 214 text-figs. London (Quaritch), 1921. 8vo.]

The first volume of this work, containing the non-Passerine birds, was published in 1916 (see Ibis, 1916, p. 505). The second volume, completing the work and containing the description of the Passerine birds, is now before us, and is a worthy monument to the industry and skill of Mr. Charles Chubb and to the memory of the late Mr. F. V. McConnell, an enthusiastic observer and collector of British Guiana Birds.

The introduction contains an itinerary of over 70 pages of the second journey undertaken by Mr. McConnell to Roraima in 1898, in which he was again accompanied by Mr. J. J. Quelch, late of the Georgetown Museum. The itinerary was drawn up by Mr. Quelch and contains a lively account of the journey to Roraima, and also of the condition of the plateau which forms the top. The avifauna was insignificant, and apparently the only bird obtained there was a Song Sparrow, *Brachyspiza macconnelli*, the type of which was collected by Mr. McConnell himself in 1898. The itinerary is illustrated by two photographs of the summit-plateau and several more of the Indians whom they came across during the trip. The bulk of the volume is taken up with the detailed description of the species, 366 in number, all of which appear to have been most carefully drawn up. It is very noticeable how little field-work has been done in British Guiana. Breeding-season, nest, eggs, and habits are followed in a very large proportion of cases by "unknown" or "unrecorded." There is undoubtedly a great field for

Mr. Beebe and his band of workers at his Tropical Research Station on the Mazaruni river, and we are pleased to see that Mr. Chubb has been able to avail himself of some of the information contained in the former's 'Tropical Wild Life' for the present volume.

During the course of his work on this volume Mr. Chubb has found it necessary to describe a number of new genera, species, and subspecies, a list of which is given in the introduction; these have nearly all been previously published in the Bulletin of the B. O. C. or in the 'Annals & Magazine of Natural History.' We notice, however, a few here described for the first time—*Grallaria regulus roraimæ*, *Vireo roraimæ*, and *Pachysylvia thoracicus abariensis*.

The ten coloured plates, as well as the very numerous text-figures, are all from the skilful brush of Mr. Grönvold and greatly embellish this most attractive work, and we can only conclude by congratulating Mr. Chubb on the completion of a most laborious and valuable work on the avifauna of our only South American colony, and Mrs. McConnell on the monument she has raised to the memory of her husband.

Gladstone on the Scottish Capercaillies.

[The last of the indigenous Scottish Capercaillies. By Hugh S. Gladstone. Scottish Nat. 1921, pp. 169–177; 2 figs.]

As is well known, the indigenous race of the Capercaillie in Scotland became extinct about 1770 and the bird was reintroduced from Sweden in 1837. It has been stated by Prof. Newton that no specimen of the old British race is known to exist; there are a pair in the British Museum which came from the Pennant collection which Mr. Ogilvie-Grant thought might be of Scottish origin, but there appears to be no positive proof. Mr. Gladstone in this paper draws attention to an old mounted male example now in the Hancock Museum at Newcastle-on-Tyne which he traces back to the collection of Marmaduke Tunstall (1743–1790)

of Wycliffe Hall, Yorkshire, the oft-quoted though anonymous author of the 'Ornithologia Britannica,' and which he believes, from the evidence he is able to produce, to be undoubtedly an example of the old indigenous race.

Grote on the birds of South-West Africa.

[Zur Avifauna des nördlichen Deutsch Südwestafrika. Von Hermann Grote. Journ. Ornith. 1922, pp. 39–49.]

Just before the war broke out Dr. F. Jaeger and Dr. Leo Waibel were engaged in a scientific and exploring expedition in the extreme north of what was then the German Colony of South-West Africa. Their work was interrupted by the war and they were unable to accomplish much, but a small collection of birds was secured, consisting of about forty species. These are now described by Dr. Grote, who has found several novelties among them, viz.: *Eupodotis afroides etoschæ*, *Dendropicus guineensis stresemanni*, *Philetairus socius geminus*, and *Mirafra sabota waibeli*.

Lönnberg on the food of the Buzzard.

[Bidrag till kännedomen om ormvråkens näringsvanor. Av Einar Lönnberg. Svensk Jägareförb. Tidskr. lix. 1921, pp. 257–263; 4 figs.]

This is a short paper dealing with the food-habits of the Buzzard (*Buteo b. buteo*) in Sweden. It is illustrated with four photographs of some curious plumage variations.

Mathews on Australian Birds.

[The Birds of Australia. By Gregory M. Mathews. Vol. ix. pts. 5, 6, pp. 193–436, pls. 425–436. London (Witherby), Dec. 1921, and Feb. 1922. 4to.]

In part 5 of Mr. Mathews's work we are concerned with seven most interesting species of terrestrial birds of the genera *Cinclosoma*, *Samuela*, *Drymodes*, *Pycnoptilus*, and *Hylacola*, which normally live on the ground, feed on insects or more rarely berries, and nest among the mallee or other scrub.

The interest evoked by them has caused their habits to be closely investigated, and in consequence we have now admirable articles on their life-histories from the pens of Capt. White, Messrs. Howe, Mattingley, Mellor, Ashby, Whitlock, Carter, Chandler, Macgillivray, and Dove, who have constantly made them the subjects of their studies, while the number of observers shows the attractiveness of the pursuit.

Samuela cinnamomea, separated in the 'Austral Avian Record' from the two races of *Cinclosoma*, is found to be akin to *Ajax* of New Guinea; it was originally sent to Gould by Sturt, who discovered it in the arid interior of the continent. Gould separated two species, Sharpe proposed a third, but these are now relegated to subspecific rank, though a little known form, *S. alisteri*, is quite distinct.

Less uncommon is another inland bird, the "Scrub Robin" (*Drymodes brunneopygia*). A new subspecies has turned up in western South Australia (*D. intermedia*), but the author's *victoriæ* proves to be a synonym of the type, and Sharpe's *pallida* belongs to the West Australian race. The nest is unmistakable, as it has a ring of little sticks or stout twigs on the outside, which line a depression in the soil.

Gould's *superciliaris* must be considered a second species, and possibly the Aru Island *D. beccarii* is a third; for this a new subspecies, *adjacens*, is propounded.

Of even more interest is the Pilot-bird (*Pycnoptilus floccosus*), supposed to announce the presence of the Lyre-bird. Everyone should read Mr. Howe's account of his experiences with this species, which can hardly be abbreviated. Gould actually described it twice.

Hylacola pyrrhopygia (V. & H.) and *H. cauta* Gould are shown to be conspecific Ground Wrens, but may hold subspecific rank with five other races.

Part 6 starts with the Coachwhip-bird, the note of which must be heard to be believed, so like is it to the crack of a whip. Locally well known, it is one of the most peculiar

of Australian birds, and was figured in the Watling drawings, whence Latham described it as *Muscicapa crepitans*. But he had already named it *Corvus olivaceus*, or White-cheeked Crow, so the latter name is here shown to have priority. There are six subspecies, and a second species has been separated from south-west Australia which may be extinct, but it would not be right to be too certain of this, in view of its peculiar haunts. It may be remarked that the exact position of the Coachwhip-bird in our list is quite uncertain, but this may be said of several species given in the present instalment.

Again the reader must be asked to study the life-histories of the gregarious Babblers (*Pomatorhinus* and *Morganornis*), often called Cat-birds or Twelve Apostles, and learn of their curious stick nests—often used communally: one species is allotted to the former and two to the latter, with fifteen subspecies in all; but we are asked to note that *Turdus frivolus* (Latham *ex* Watling) is not synonymous with either. The "Field Wrens" come next, where the habits are once more a great consideration. *Calamanthus montanellus* of Milligan should perhaps be specifically separated from *C. fuliginosus* with a subspecies *ashbyi*, but p. 287 must be read to understand the whole position. Then *Calamanthus campestris* constitutes a new subgenus, *Eremianthus*, and finally we finish with four races of the Migratory Song-Lark (*Cinclorhamphus*).

Miller and Griscom on new Central American Birds.

[Descriptions of proposed new birds from Central America, with notes on other little-known forms. By W. DeW. Miller and L. Griscom. Amer. Mus. Novit. New York, no. 25, Dec. 1921, pp. 1–13.]

This paper contains preliminary descriptions of new forms collected by the authors in Nicaragua, as follows:—*Ortalis cinereiceps saturatus, Creciscus ruberrimus, Gallinula chloropus centralis, Asturina plagiata micrus, Ictinia plumbea vagans, Aramides plumbeicollis pacificus.*

Murphy on the Sea-birds of Peru.

[The Sea-coast and Islands of Peru. By Robert Cushman Murphy. Parts IV–VII. Brooklyn Museum Quarterly for 1921, pp. 1–28, 35–55, 91–105, 95–153.]

In these four articles in the Brooklyn Museum Quarterly Mr. Murphy concludes his account of his travels on the sea-coast of Peru, the first portion of which has already been noticed (Ibis, 1921, p. 329). The first article contains a very interesting account of the Chincha Islands as they were in 1869, when Dr. Lucas—then a young man, now the Director of the American Museum—visited them in the sailing-ship 'Lottie Warren' to obtain a cargo of guano for transport to London. In the first article Mr. Murphy concludes his account of the Chincha Islands; he afterwards visited one or two localities on the mainland, finally ending up at Callao. The very numerous photographs are excellent and give a wonderful idea of the abundance of the bird-life along the Peruvian coasts. Those of the Condors in flight are exceedingly interesting, and placed alongside one of an Albatros photographed in the south Atlantic exhibit a remarkable contrast in the relative length and breadth of the wings of these birds.

Murphy and Harper on the Diving Petrels.

[A review of the Diving Petrels. By Robert Cushman Murphy and Francis Harper. Bull. Amer. Mus. N. H. xliv. 1921, pp. 495–554.]

The Diving Petrels (Pelecanoididæ) form a very striking and very distinct family among the Tubinares and are confined to Antarctic and Subantarctic seas, though one species ranges north along the west coast of South America nearly to the equator. They have a curious resemblance to the Auks of the northern hemisphere, which, however, is probably due to convergence and similar external conditions and is of no phylogenetic significance.

Messrs. Murphy and Harper have been able to examine a large series in American Museums, chiefly from the

Brewster-Sanford collection from South American coasts, while the junior author has also had an opportunity of examining the material in the English and French Museums. With these advantages they have been able to make a thorough revision of all the described forms, which they propose to arrange in four subgenera and five species, one of which is divided up into five subspecies.

There are two problems which are difficult of solution. One of these is that a distinct species, *P. magellani*, is interposed geographically between two closely-allied subspecies, *P. urinatrix coppingeri* of southern Chili and *P. u. berard* of the Falkland Islands and the coast of Argentina, the first-named being found in the Magellan region between the other two. The other crux is the occurrence of *P. georgicus* on South Georgia as well as on Macquarie Island south of New Zealand.

In their final discussion the authors endeavour to explain these anomalies. The new names proposed are *Porthmornis* and *Pelagodyptes*, subgenera for *P. magellani* and *P. georgicus* respectively. The new races had been already named.

Oberholser on desert bird-life.

[Glimpses of desert bird-life in the Great Basin. By Harry Oberholser. Smithsonian Report for 1919, 1921, pp. 355–366.]

In this little essay Mr. Oberholser sketches in a brief and attractive manner the characteristic bird-life of the great tract of country west of the Rocky Mountains and east of the coast range of California, the greater part of which is a continuous desert from south-east Oregon to the mouth of the Colorado river, where it pours its waters into the head of the Gulf of Mexico. Notwithstanding its desert characters, there are a good many lakes, mostly salt, the chief being the Great Salt Lake of Utah, which harbour many water-birds. These and the more strictly desert forms, such as Horned Larks, Road-runners, Gambel's Partridges, and other less familiar birds, are all pleasantly described.

Phillips on breeding hybrids.

[A further report on species crosses in Birds. By J. C. Phillips. 'Genetics,' Baltimore, vi. 1921, pp. 366–383; 5 figs.]

This paper deals with some further experiments in cross-breeding Ducks and Pheasants, and is to be taken as a final report on these investigations, which were reported on in a previous paper (Journ. Experimental Zoology, xviii. 1915, p. 69). The general conclusion arrived at is that when the crossings are between closely related species inheritance follows the Mendelian rules, but when the species are genetically or widely apart morphologically great difficulties arise, crosses are difficult to obtain, and when obtained are often themselves infertile; moreover, plumage patterns and colours are affected by so many factors that the majority of segregates are more or less intermediate. The paper is illustrated with photographs of some of the variations obtained, and is of considerable interest to students of heredity.

Schaanning on a new race of Blackcock.

[Bjerkreim-Orren. *Lyrurus tetrix bjerkreimensis*, subsp. nov. Med 8 plancher, 3 tekstfiguren og 1 kartriss, av H. Tho. L. Schaanning; pp. 1–25, 1921.]

This little pamphlet, which has no indication of being an extract from any journal, contains an account of a curious race or variation of the Blackcock. It would best be described as a semi-albino. The cock retains the blue-black head and neck of the ordinary type, and the underparts are also black, though in some species they are brownish. The back, wings, and tail are white with a varying amount of brown or black speckling. The hens are also pale and semi-albinistic.

Mr. Schaanning has drawn up a list of forty-eight examples of this type, and has himself examined about thirty-two of them. Far the greater number have been obtained in the southern portion of Norway between Stavanger and

Kristiania, while six have occurred in Oesterdalen to the north of Kristiania and one in Sweden in the Kalmar district on the Baltic some 300 miles away. It appears that the variation coexists side by side with the normal type, and would therefore be more correctly regarded as a sport or mutation and can hardly be considered a subspecies in the ordinary sense in which that term is now used.

Mr. Schaanning has, however, thought it best to give this variation a trinomial name derived from the district in which it occurs. He regards it as an incipient species, which is increasing and gradually becoming the predominant and prevailing type of the Blackcock in this particular region.

There are a number of interesting questions which arise in regard to this curious variety, and some of them are discussed at length in Mr. Schaanning's paper, to which the reader must refer for further information. The paper is very well illustrated with coloured and other photographs of the various specimens.

Sheels on Ulster Birds.

[Rare birds in Ulster recorded by Mr. Alfred Sheels. Reprinted from the "Northern Whig," Belfast, Jan. 1922.]

A list of the occurrences of rare birds in the neighbourhood of Belfast such as Golden Oriole, American Black-billed Cuckoo, Snowy Owl, American Bittern, Wilson's Petrel, etc., etc., by Mr. Alfred Sheels, a well-known Belfast taxidermist.

Todd on the Tyrannidæ.

[Studies in the Tyrannidæ. I. A revision of the genus *Pipromorpha*. By W. E. Clyde Todd. Proc. Biol. Soc. Washington, vol. 34, Dec. 1921, pp. 173–192.]

A careful revision of the South American genus of Tyrant-birds, *Pipromorpha*, with key and full synonymy. Four species, divisible into eleven races, are recognized.

Two of these, *Pipromorpha macconelli amazona* from the Lower Amazon valley and *P. oleagina pacifica* from western Ecuador, are described as novelties.

Wetmore on Birds' temperature.

[A study of the body temperature of Birds. By Alexander Wetmore. Smithsonian Miscell. Collect. vol. 72, no. 12, pp. 1–52, 1921.]

For some years past Mr. Wetmore has been making observations on the temperature of birds whenever an opportunity occurred, and he has now published a complete record of his observations on over 300 species, to which he has added notes on some further 200 species from available literature. He has therefore a good basis of fact from which to deduce results. As is well known, the body temperature of birds is higher than that of man, varying from about 100° F. to 110° F. in exceptional circumstances. It is interesting to find that there is a marked diurnal variation in temperature in the case of small birds, often as much as 6° or 7°, the highest temperature being in the middle of the day, the lowest at night; but in Owls, whose activity is chiefly nocturnal, the reverse is the case. In the case of nestlings, those species which are altricial show a much lower average temperature than adults, and are undoubtedly much dependent on their parents for warmth. It has been found, however, that the temperature of such birds may be reduced to 97° without death resulting. Mr. Wetmore suggests that the air-sacs, the physiological function of which has been a moot point for many years, may be of use for regulating the temperature of birds in the absence of sweat-glands, and he brings forward several cogent arguments in favour of this hypothesis. Finally he points out that birds which are generally considered lowly organized, such as Grebes, Herons, and Pelicans, have a distinctly lower temperature than Pigeons, Woodpeckers, and Passeres: this is well brought out in one of the tables of the average temperature of families of birds. This is an important paper and well worthy of attention.

Witherby on the Western Mediterranean Shearwater.

[On the British taken examples of the "Levantine" Shearwater. By H. F. Witherby. Brit. Bds. xv. 1921, pp. 151–153.]

Dr. Lowe has recently shown that the Shearwater inhabiting the western half of the Mediterranean is subspecifically distinct from the well-known *Puffinus puffinus yelkouan*, and he has named it *P. p. mauretanicus*. Mr. Witherby has therefore examined twelve of the twenty-eight recorded examples of the Levantine Shearwater, taken on the coasts of the British Islands, chiefly along the Yorkshire coast, in September. The twelve examined are all undoubtedly of the new race, and five others are clearly of this form from the descriptions given. It seems, therefore, that the Levantine Shearwater must be removed from the British list and its place taken by the Mauritanian subspecies, the breeding place of which is not known up to the present day.

Auk.

[The Auk. A Quarterly Journal of Ornithology. Vol. xxxviii. for 1921; 4 nos.]

'The Auk' for last year has suffered considerable delay in publication owing to a printers' strike; the July number was not published till 5 October, and the October number did not reach us till January. The number of articles is considerable, and we can do little more than mention the titles of some of the more important. Of faunal papers dealing with North America we find field-observations in the Quebec Province by Mr. H. Mousley, in Connecticut by Dr. L. B. Bishop, in Florida by Mr. A. H. Howell, in Arkansas by Mr. C. J. Hunt, and in Texas by Dr. T. G. Pearson; and among studies of individual birds we note Mr. A. O. Cross on the Dicksissel (*Spiza americana*), Mr. F. H. Lewis on the Philadelphia Vireo, Mr. H. W. Wright on the Waxwing and the Mocking-bird in New England, and some reminiscences of the Passenger Pigeon in Iowa in 1872–76 by Mr. F. Bond. Mr. C. S. Arthur has made a special study of the Skimmer (*Rynchops nigra*);

he believes that the very curious bill is not used to collect insects when skimming along the surface of the water, but he does not bring forward any novel explanation of the use of this curiously shaped organ.

Among papers dealing with exotic avifaunas, Mr. E. L. Poole writes on the birds he observed when in France during his service there in 1918, Mr. W. R. Allen on the conditions of bird-life on Lake Poopo in Bolivia, south of Titicaca, Mr. Kirke Swann describes a collection of Accipitrine birds from Venezuela and proposes a new subspecies of *Heterospizias*, and Mr. Kuroda sends descriptions of seven new subspecies of Japanese Woodpeckers. Messrs. Miller and Griscom review the races of *Ortalis vetula* from Mexico and Central America and propose to recognize several new races, and Mr. J. L. Peters does the same for the West India species of *Holoquiscalus*.

Dr. L. B. Bishop believes that the Loon, or as we call it the Great Northern Diver, of the interior and western portions of North America can be distinguished by its slightly smaller size from the typical race. He proposes to call it *Gavia* (*Colymbus* of our nomenclature) *immer elasson*. The wings of the breeding males of the new race average 354 mm. against 388 mm. for the typical one.

Mr. Chapin has made a curious discovery that the inner primaries of nestling Woodpeckers are very much abbreviated, and make a sort of gap in the wing when spread out; these short quills are replaced by quills of normal length at the early post-juvenal moult. In some cases one, in other cases two, are affected, while in one or two genera examined (*Sphyrapicus*) the phenomenon did not occur. The only explanation suggested is that it may enable young birds brought up in a confined nesting-hole while being fed by their parents to raise their heads through one another's wings; a curious photograph of young Flickers being fed at the nesting-hole illustrating the account, seems to confirm this.

From Mr. L. M. Loomis is an article on the trans-equatorial migration of Petrels, and from Mr. F. C. Lincoln

and S. P. Baldwin some remarks on bird-banding; while a portrait and a sympathetic memoir by Mr. T. S. Palmer commemorates the services of the late William Dutcher to the cause of bird-conservation in the United States.

Avicultural Magazine.

[The Avicultural Magazine, being the Journal of the Avicultural Society for the study of Foreign and British Birds in freedom and captivity. Third Series. Vol. xi. 1920 and Vol. xii. 1921.]

It is some time since the Avicultural Magazine was noticed in these pages, and we have now two complete volumes before us. Dr. Renshaw, the editor, resigned in August 1920, and his place has since been taken by Messrs. Pocock and Seth-Smith.

In the 1920 volume is an interesting article by Mr. St. Quintin on his Manchurian Cranes, in which he suggests that a patch of dull reddish skin between the eye and the angle of the mouth, present in the male and absent in the female, probably constitutes a good sexual distinction. Other avicultural articles are by Mr. F. J. Hunter on the Scottish Zoological Park, by Mr. Pocock, Mr. Shore Baily, and Mr. Herbert Astley. Mr. Philip Gosse concludes his notes on the birds of the Balearic Islands, and Mr. Hopkinson writes on Gambian Rollers. Among the illustrations is a beautiful drawing of Lesson's Amazon by Mrs. Cook, and a coloured plate of a remarkable albino Bulbul, probably *Molpastes hæmorrhous*. We regret to notice the deaths of Miss R. Alderson and Dr. Lovell Keays, both enthusiastic aviculturists and valuable members of the Society.

In the 1921 volume Mr. St. Quintin writes on his White Asiatic Cranes and their need for animal or insect food, and there are many other avicultural articles from Mr. Amsler, Capt. Rattigan, Mr. Herbert Astley, Mr. Shore Baily, and Mr. Delacour; while Lord Tavistock continues his experiments of breeding exotic birds at liberty—not very successful as a rule, as in the case of the Passerine Parrotlet which may perhaps be a free translation of *Psittacula*

passerina, though the vernacular name used is unknown to us.

Miss Knobel suggests a most interesting method of sexing Parrots, as a rule a most difficult task. She finds that in the case of males the pelvic bones taper to a point and lie so close to one another that they are touching, whereas in the hen the pelvic bones are wide enough apart to allow an egg to pass. This difference can be easily made out in the living bird by carefully feeling it with the fingers in the neighbourhood of the pelvis. A good account of the habits of the Mallee Fowl, one of the mound-building Brush Turkeys of Australia (*Leipoa ocellata*), comes from the pen of Mr. T. P. Bellchambers, and the September number has a fine coloured plate of the Long-tailed Roller (*Coracias caudatus*), reproduced by arrangement with the Société d'Acclimatation de France through the help of Mons. J. Delacour.

Bird-Lore.

[Bird-Lore: A bi-monthly Magazine devoted to the Study and Protection of Birds. Official organ of the Audubon Societies. Vol. xxii. for 1921; 6 nos.]

We have nothing quite like 'Bird-Lore' on this side of the Atlantic, and it seems a pity that the British Royal Society for the Protection of Birds has not been able to attempt something of the kind. It is certainly the most attractive of all the popular magazines dealing with birds. The six numbers composing the volume for 1921 have each a coloured plate by Bruce Horsfall, Fuertes, or Major Allen Brooks, all consummate bird artists, and there are also numbers of very beautifully reproduced photographs. The January number is chiefly occupied with the annual Christmas census. There are 134 lists of birds noted by various contributors on or about Christmas day from all over the United States and Canada, while one observer sends in a list of 18 species and 313 individuals met with by him at Cambridge, England. As would naturally be

expected, it is in the mild climate of the Pacific coast that the largest returns are made ; here three observers are able to record 96 species and 5596 individuals, but we notice that their observations were made from an automobile and that they covered about 30 miles.

We regret to see that several attempts have recently been made to get bills through Congress to make use of portions of the National Parks at Yosemite and Yellowstone for the purpose of building dams, power-houses, and factories, and to destroy the amenities and the wild and natural beauties of these priceless reservations. The Audubon Societies and their central organization are doing all they can to fight these proposals, and we can only wish them every success.

Another matter which is adversely affecting bird-life along the American coasts as well as our own is the increasing use of oil fuel by large ships and motor-boats ; the oil-tanks are cleaned out and the oil spreads over a vast area, and is the cause of the death of countless sea-birds. We trust that some means may be found to mitigate this disastrous result of modern invention.

Mr. E. Thompson Seton contributes a second article on the question "Why do Birds bathe?" There seems to be no satisfactory answer covering all cases, though we should have supposed that one of the chief reasons was to rid themselves of external parasites. As a memorial to the late John Burroughs, the well-known writer on nature-study, it is proposed to acquire his cottage "Slabsides" and the little valley in which it stands, as a memorial, to be preserved as a place of pilgrimage for all lovers of nature. It is sad to learn that Gilbert White's home at Selborne, where he died in 1793, is closed to the public and cannot now be visited.

Most of the articles in 'Bird-Lore' are naturally of only local interest, but we would draw attention to the very useful Seasonal Reports from all parts of the United States which are to be found in each number.

Bird Notes.

[Bird Notes: The Journal of the Foreign Bird Club. Edited by Wesley T. Page. Ser. 3. Vol. iv. for 1921; 12 nos.]

The last completed volume of 'Bird Notes' contains many articles of interest to Aviculturists, though we regret to notice that the contributors are very few in number, the greater part of the volume being due to the energy of Mr. Page the Editor and to Mr. Shore Baily. The former has made many journeys to visit the aviaries of various members, such as the Duchess of Wellington, Mrs. Burgess, and Capt. Rattigan, and has reported on these; he also contributes a number of shorter articles on his experiences with Pittas, Cape Doves, Prince Lucian Conures, and Tanagers. Mr. Shore Baily, also an enthusiastic and successful breeder, writes on his successes and otherwise in breeding Waders, Senegal Coursers, Grenadier Weavers, Picui Doves, and many other birds. His account of the habits of the Senegal Pie (*Cryptorhina afra*) seem of special interest, as it is a bird which is but rarely imported alive. The other principal contributor is the Marquis of Tavistock, whose chief object appears to be to get foreign birds to breed at liberty; Cordon Bleus (*Estrilda angolensis*) and Budgerigars (*Melopsittacus undulatus*) do not seem to take to our fickle climate very readily, but such experiments, when successful, are not always attended by pleasant results, as witness the disastrous acclimatization of the Little Owl.

There are no coloured plates in this volume, but there is a charming drawing by Mrs. A. M. Cook from life of a Blue-tailed Pitta (*Eucichla cyanura*) and a characteristic plate in black and white of Levaillant's Barbet, *Trachyphonus cafer*, by the late Mr. H. Goodchild, besides plenty of photographs.

Bombay Journal.

[The Journal of the Bombay Natural History Society. Vol. xxvii. nos. 1–4, 1920–1.]

The last volume of the Bombay Journal forms a stout

volume of nearly a thousand pages and contains much of interest in the matter of ornithology. Mr. Stuart Baker continues his leisurely survey of the Indian Game-birds, and each of the numbers has an article prefaced by a fine coloured plate; these represent *Galloperdix bicalcarata*, *Francolinus f. melanotus*, and *Arboricola r. rufigularis*. Mr. Baker has also commenced his Check-list of the Birds of the Indian Empire, which will be the foundation of the new edition of Oates & Blanford, and also we hope of the Systema Avium Indicarum. The three present instalments deal with the Passerine families. The classification is that of Oates with certain small modifications. The species and subspecies are serially numbered and the corresponding number of the 'Fauna' given; the original reference, type-locality, and a line on the distribution follow. We observe that a comma is placed between the specific and the author's name; this is not the usual practice now and is specially mentioned as undesirable in the International Code. We also notice that a good many birds are included which can hardly be said to range into the Indian Empire, as for instance the two species of *Podoces* (p. 233) and *Parus cyanus tianschanicus* (p. 234), but the list will undoubtedly be of the greatest use to all working Indian ornithologists.

Among other ornithological papers Mr. H. Whistler has some further notes on Simla birds containing nine additional species previously unobserved; he also contributes some notes on the Nightjars of the Punjab. Mr. C. H. Donald has completed his account of the Birds of Prey of the Punjab, which contains many devices and suggestions for recognizing these birds when on the wing. Mr. F. Ludlow has some nesting notes from Ladak and the Tso-Morari Lake in Tibet, and Capt. R. W. G. Hingston a list of the birds of Dharmsala in the northern Himalaya with interesting notes on vertical distribution and altitudinal migration between 4000 ft. and 15,000 ft. A skin of the Arabian Ostrich obtained by Sir H. Wilson from a Sheikh in central

Arabia has been presented to the Museum at Bombay, and forms the subject of an interesting note by Mr. S. H. Prater. Finally, there is a long and important article on the birds of northern and western Persia by Mr. P. A. Buxton, based on collections made by himself and also by Major R. E. Cheesman in 1918 and 1919. This paper has a good map showing the localities visited.

All those interested in the Egret question should read the extract from the 'Daily Gazette' of Karachi by Mr. G. Birch on p. 944, from which it seems that an industry comparable to the Ostrich industry is undoubtedly growing up in Sind of keeping Egrets for their plumes.

Bull. Essex County Ornithological Club.

[Bulletin of the Essex County Ornithological Club of Massachusetts for 1921. Publ. at Salem, Mass., U.S.A.]

The annual bulletin of this Massachusetts Bird-club is mostly occupied by matters of local interest in regard to the avifauna of New England. The first article by Mr. G. M. Allen deals with records of the Wild Turkey in New England. This fine bird, which, however, is not the origin of our domestic breed, is still to be met with in Virginia and the southern States, and probably ranged northwards as far as the State of Maine. It, however, appears to have become extinct in the New England States in the "forties" of the last century. Mr. J. C. Phillips, who has for twenty years kept an accurate record of the ducks and other waterfowl shot by him at Wenham Lake in Massachusetts, has drawn up a summary of the list showing that the Black Duck (*Anas rubripes*) is far the most common, while the Gadwall has only one record. Whether Loons and other Diving-birds make use of their wings to aid them when diving is discussed by Mr. E. H. Forbush. An example of the Sheld-Duck (*Tadorna tadorna*), obtained by Capt. Tobey in Ipswich Bay in October 1921, is the first recorded example from North America, and is figured in the frontispiece with a notice by Mr. A. P. Morse. Finally, the

annual excursion of the club up the Ipswich river, which took place on May 14–15, was a great success, and resulted in the recognition of 104 species including four previously unrecorded.

Fauna och Flora.

[Fauna och Flora. Populär Tidskrift för Biologi. Utgifven af Einar Lönnberg. Vol. for 1921; 6 parts.]

Dr. Lönnberg's magazine of natural history for last year contains a good number of articles on ornithology, from which we select the following titles. Mr. S. G. Blomqvist and E. Rosenberg have a long paper on the birds of the Nerike district of central Sweden, a region abounding in swamps and lakes. The birds are arranged ecologically according to the kind of vegetation which they most affect: for instance, *Acrocephalus streperus*, *Circus æruginosus*, *Fulica atra* and others are associated with the reed-beds (*Arundo phragmitis*), *Circus cyaneus* with the patches of willow along the shores of the lakes and seas. Dr. Lönnberg himself contributes several notes on birds; he records the occurrence of the Surf Scoter, *Oidemia perspicillata*, in the Baltic, and *Larus argentatus cachinnans* the Mediterranean Herring-Gull—a new record for Sweden, also taken on the Baltic coast. He also describes a curious albino Gull, which he identifies as *Larus marinus*, and has an interesting article on the biology of the Woodcock. From Mr. H. Zetterberg there is a list of the dates of the arrival in spring of various birds in southern Lapland, and as the records have been kept from 1906 to 1919 a good average date can be struck. Mr. I. Hilden has an article on the birds of Runö, a little island in the middle of the Gulf of Riga, and Mr. K. Kolthoff on the history of our knowledge of the birds of the island of Öland, whence Linnæus described a good many species. Mr. R. Palmgren records for the first time *Gyps fulvus* from Finland, and Graf Zedlitz discusses the races of the Jackdaw, *Colœus monedula*.

Gerfaut.

[Le Gerfaut. Revue belge d'Ornithologie. 11e Année, 1921; 4 fasc. in 3.]

One of the most interesting articles in the 'Gerfaut' for last year deals with the present condition of the Yser district, which was the scene of so much of the fighting during the war. The town of Dixmude, which has not apparently been restored, is now occupied by *Passer montanus* instead of *P. domesticus*; while other birds formerly not found there, such as the Linnet, are now abundant. Along the valley of the Yser itself were formerly rich and productive farms. Here, partly owing to the shell-holes and partly owing to the destruction of the dykes, the country has become a vast marsh overgrown by reeds and bulrushes, and has now been occupied by a number of water- and shore-birds. The Garganey, Shoveler, and Pochard, the Avocet and the Stilt all nest there, some of these being previously hardly known in Belgium. All this is related by M. C. Dupond in a most interesting communication.

M. A. Mercier has a note on the song of the "Hypolais contrepaisant," which presumably is our Icterine Warbler, and the "*Rousserolle des marais*," probably the Great Reed-Warbler; it would assist readers in other countries if the scientific names were added to these rather obscure French vernacular names.

In the second fascicule M. G. van Havre, with the assistance of a number of collaborators, has put together notes on the occurrences of the rarer birds in Belgium between May 1920 and April 1921; included in the list are examples of both *Buteo buteo ruficaudus* and *B. b. vulpinus* as well as other rare species. In a further article the same author discusses the occurrence of the two Spotted Eagles in Belgium. Some six instances are recorded; of these, M. van Havre assigns one to *Aquila pomarina* and two other recent ones to *A. clanga*, while the other three are uncertain. M. A. Galasse recounts his experiences in the Forest of Bouillon where he has met with a number of interesting birds breeding, including the Black and Red Kites,

the Goshawk, and the Buzzard. M. L. Coopman gives a similar list for the district of Fagnes, where the Scotch Grouse has been introduced and has become thoroughly acclimatized.

Irish Naturalist.

[The Irish Naturalist: A monthly Journal of General Irish Natural History. Vol. xxx. for 1921; 12 nos.]

We very much regret to learn that the 'Irish Naturalist' has reached a critical stage of its existence, and that unless it receives further support it will be impossible to continue its publication. It is to be hoped that means will be found to carry it on even at a loss. It is the only magazine of the sort dealing with Irish Natural History, and it would be a great misfortune if it became extinct.

The volume for 1921 contains very little ornithological matter, except two articles by Mr. J. P. Burkitt on the relation of song to the nesting-birds and some additional comments by Messrs. D. C. Campbell and N. H. Foster. Mr. Burkitt's theme appears to be that song is at its best before the actual mating period, and that mating seems to put a brake or stopper on song; and that we should have comparatively little song later in the year were it not for unmated males and the recrudescence of song when there are second broods. He also comments on the absence or scarcity of autumnal or winter song in the north of Ireland as compared with what is described as taking place in south-eastern England during those months. The two articles are interesting reading and should be studied by all interested in Bird Psychology. The only other article on birds in the present volume is one by Mr. R. F. Ruttledge containing some notes on birds in Mayo and Galway.

Ornithologische Monatsberichte.

[Ornithologische Monatsberichte, herausgegeben von Prof. Dr. Ant. Reichenow. 29 Jahrgang for 1921; 6 double numbers.]

This is the last volume of the 'Ornithologische Monatsberichte' to be edited by the founder, Dr. Reichenow.

It will be conducted in future by Dr. Stresemann, who has also succeeded to Dr. Reichenow in the keepership of the bird-collection of the Berlin Museum. In the space at our disposal it is only possible to briefly mention the titles of some of the articles of more general interest. Dr. A. Laubmann writes on the distribution and breeding-habits of the Reed-Warbler in the Algäu district of Bavaria, and Dr. J. Gengler discusses the forms of the European Bullfinch. Father Schmitz has some notes on the birds of the Lake of Galilee in Palestine which include Pelicans and Flamingos. A report from Mr. S. Thienemann on the bird-watching station at Rossitten announces the occurrence of a Rock-Thrush (*Monticola saxatilis*), a new bird for East Prussia. Mr. H. Stadler writes on the song of *Phylloscopus bonelli* and *P. sibilatrix*, and Mr. E. P. Tratz on the occurrence of some rare birds in the Austrian Alps including *Turdus atrogularis*, *Ciconia nigra*, and *Phalacrocorax pygmæus*. Dr. Stresemann has a careful and detailed account of the moult of the wing-feathers in the Kingfishers, and Mr. H. Grote has a note on a very dark form of the Hoopoe from Upper Burma, but he does not name it, as it may be the *Upupa nigricans* of Horsfield and Moore. In other notes he describes *Eremomela pusilla tessmanni* and *Pentholæa albifrons reichenowi* from the interior of Cameroon and *Erythropygia quadrivirgata rovumæ* from the Rovuma valley in Tanganyika Territory as new subspecies, and Graf Zedlitz revises the races of *Parisoma subcæruleum*, adding a new race *P. s. ansorgei* from Angola.

Revue Française d'Ornithologie.

[Revue Française d'Ornithologie, Scientifique et Pratique. 13e Année, nos. 141–152 for 1921.]

Our honorary member, M. A. Menegaux, has now completed the thirteenth year of his editorship of the French Review of Ornithology, and we may perhaps venture to congratulate him on the able way in which he has managed to carry on his work through so many difficult years. We will briefly mention here some of the more important articles

in the last year's volume. M. J. Berlioz reviews a collection of birds made by Drs. Gromier and Lepetit in Kenya Colony and Uganda in 1910 and 1911; in some cases field and taxonomic notes are added. Other papers dealing with African birds are a short note by M. Menegaux himself on the birds of Dakar, in Senegal, and descriptions of two new subspecies from Togoland from the pen of Dr. Millet-Horsin—*Phalacrocorax africanus menegauxi* and *Halcyon torquatus pontyi*. M. A. Labitte has some interesting observations on the birds of the devastated regions of France, especially in the Department of Ardennes to the north of the Argonne Forest. He does not find so much alteration in the avifauna of these districts as he had expected. The same author contributes some notes on the nesting-habits of the Buzzard in the same region, where it is fairly numerous, and states that he believes that, when disturbed, the parents carry off their nestlings from the nest to a place of safety some distance off. Mr. L. Coopman, writing in a subsequent number, states that he has observed the same habits in the case of the Long-eared Owl. From Dr. A. Rochon-Duvigneaud we have an essay on the large Birds-of-Prey which are met with in the gorges of the Tarn on the slopes of the Cevennes; here are to be found in fair numbers *Gyps fulvus*, *Neophron percnopterus*, *Aquila chrysaëtus*, and *A. belisarius*. Lastly, we notice Mr. Jourdain has contributed an interesting account of the birds of the celebrated oak-forest of Mamara, in Morocco, which he visited in company with Capt. Congreve in April 1920; and M. Menegaux has published a translation of Capt. Lynes's paper on the birds of the Middle Atlas, which appeared in 'The Ibis' of the previous year.

Scottish Naturalist.

[The Scottish Naturalist: A Magazine devoted to Zoology. Vol. for 1921; nos. 109–120]

We regret to learn from the first number of the 'Scottish Naturalist' of last year that Dr. Eagle Clarke has withdrawn

from his post as one of the Editors-in-chief of the magazine, and that his name now takes a more modest position among the assistant Editors. His place has been taken by Dr. James Ritchie, the Assistant-Keeper of the Royal Scottish Museum.

Among the many articles in last year's volume we find one from the late Capt. S. E. Brock; it was found among his papers after his death, and though written before the war is published as it stands. It deals with Ecological Associations of Scottish birds, dividing them into eight groups in accordance with their breeding-grounds of a certain geological or botanical type such as Alpine, Moorland, Maritime, or Woodland Associations. From Misses Baxter and Rintoul we have their carefully compiled annual report on Scottish Ornithology for 1920, covering rare occurrences, migration notes, plumage variation, and changes of habit. They also contribute an article on the Pintail as a breeding bird in Scotland. This duck appears to have only established itself at Loch Leven on the mainland, though a few appear to nest every year in Orkney and Shetland.

Dr. Eagle Clarke announces the first occurrence of the Greater Snow-Goose (*Chen nivalis*) in British waters. It was shot on the river Dee in Kirkcudbrightshire and is now in the Royal Scottish Museum. The only previous record is of one obtained in co. Mayo, Ireland. In company with Surg.-Admiral Stenhouse, Dr. Eagle Clarke again visited Fair Isle in September last; they were fortunate enough to obtain two birds of exceptional interest—the eastern form of the Lesser Whitethroat (*Sylvia curruca affinis*) and an adult Yellow-legged Herring-Gull (*Larus argentatus cachinnans*). The Whitethroat is hitherto unrecorded from the British Islands and the Gull is new to the Scottish avifauna.

Mr. W. E. Collinge in a short article states that he has received of late several examples of the Common Tern (*Sterna hirundo*) killed between the months of October and

January, showing that it is not an exclusively summer visitor as hitherto generally believed. He also sends a plan for a bird-census for the British Isles on similar lines to one adopted in the United States by the late Prof. W. W. Cooke.

Contents of recent ornithological and other Journals.

In future we propose to give briefly the principal contents of the journals regularly received as they appear, and not to reserve the notices until the completion of each volume. We believe that it will be more useful to our readers to have the contents of these journals at once, instead of waiting till their freshness has worn off.

Anzeiger Ornith. Gesells. in Bayern,
no. 4, Mch. 1921, no. 5, Dec. 1921.

Stresemann, E. Corrections in the nomenclature of some Oriental birds.

Hellmayr, C. E. Description of 12 new subspecies of South American birds.

Stresemann, E. Description of 11 new species and subspecies of birds from northern New Guinea and New Britain (Neupommern).

Grote, H. Description of five new subspecies of African birds from the Chad region and interior of Cameroon.

Hellmayr, C. E. Two new Brazilian birds.

'Auk,' vol. xxxix. no. 1, Jan. 1922.

Chapman, F. M. Eulogy on the late Dr. J. A. Allen, with a portrait.

Michael, C. W., and Michael, Enid. Notes on the habits of the Harlequin Duck, with some fine photographs of the birds swimming in a stream in the Yosemite valley, California.

Whittle, C. L. Migration and concentration of the Myrtle Warbler on the coast of South Carolina, near Charleston.

Griscom, L. A discussion of sight records: how far they can be trusted and the limits within which they can be accepted as of scientific value.

Criddle, N. Arrival and departure dates of migrants in Manitoba based on 25 years' observations.

Hawkins, C. J. Sexual selection and bird-song: a continuation of a previous article in the 'Auk' of Oct. 1918.

Murphy, R. C. Notes on some rare Petrels which have been recorded on the coasts of North America. *Oceanodroma hornbyi* is shown to be almost certainly confined to the Pacific coasts of South America.

Faxon, W., and Hoffman, R. Further notes on the birds of Berkshire county, Massachusetts.

Oberholser, H. C. Notes on North American birds. XI. Dealing with the names and status of seven species.

Horsey, R. E. The distribution of birds in eastern Kentucky.

Stone, W. *Speotyto cunicularia carrikeri*, subsp. n. described from Boyaca, Colombia.

Palmer, T. S. Account of the Meeting of the A. O. U. at Philadelphia in November last.

Bird-Notes (3), v. no. 1, Jan. 1922.

Page, W. T. Aviculture of Mannikins (*Spermestes*).

Baily, W. S. Nesting of the Algerian Chaffinch (*Fringilla spodiogenes*) in captivity, with photos.

'Emu,' Melbourne, vol. xxi. pts. 1, 2, July, Oct. 1921.

Campbell, A. J. The Pallid Pardalote (*Pardalotus pallidus*) with coloured plate.

Chisholm, A. H. Field-notes on the recently described *Atrichornis r. jacksoni* and *Pachycephalus o. macphersonianus*, with photographs.

Nubling, E. The Satin Bower-bird, with field-notes and photographs of the bower.

White, H. L. Descriptions of some previously unknown Australian eggs.

Howe, F. E. A review of the genus *Climacteris*.

Edwards, H. V. List of birds observed in a district on the south coast of New South Wales.

Cole, C. F. Variation in the Black-backed Magpie (*Gymnorhina tibicen*).

Carter, T. Notes and remarks on some Western Australian birds.

Dombrain, E. H. List of birds observed at "Watercourse" in north-western New South Wales.

(In part 2.)

White, H. L. Description with coloured plate of a new Parrot, *Psephotus narethæ*, from central Western Australia.

White, S. A. Account of an expedition to the Finke river in central Australia and a list of birds seen, with some good photographs.

Tregellas, T. Further notes on the haunts and habits of the Lyre-bird (*Menura superba*), with photos.

Ferguson, E. W. Notes on Australian Petrels and Albatroses.

Le Souef, A. S. Notes on birds seen at Ebor and the Nullarbor Plain on the borders of South and Western Australia.

Agnew, N. V. I. More notes on the birds of Peel Island, Moreton Bay, Queensland.

Russell, J. List of the birds of Barunal Plains, Victoria.

Fauna och Flora, Upsala, 1922, no. 1.

Sjöbeck, M. The Black Redstart, a breeding bird near Helsingborg in southern Sweden.

Lönnberg, E. A Buzzard ringed in southern Sweden, killed in France.

Hornero, Buenos Aires, vol. ii. no. 3, Aug. 1921.

Dabbene, R. A review of the Petrels and Albatroses of the southern Atlantic, and their distribution in the four areas—Antarctic, South Georgian, Falklands and Tierra del Fuego, and Tristan da Cunha.

Hellmayr, C. E. Remarks on the Neotropical species of the genus *Anthus*, with a review of the species and races; four new races are described.

Wace, R. H. A list of the birds of the Falkland Islands.

Fiebrig, C. Some field-notes on Paraguayan birds, with photographs chiefly of nests.

Lahille, F. Birds in relation to Agriculture.

Jaarbericht Club van Nederlandsche Vogelkundigen, vol. ii. pt. 1, 1921.

Heurn, Jhr. F. C. van, and **Snouckaert van Schauburg, Baron R.** Bird-notes and studies in the Gajo district, W. Sumatra, with map and photos, and a list of species collected.

J. S. The birds of Homer's poems.

Stresemann, E. Note on *Chrysocolaptes lucidus chersonesus*, a rare Sumatran Woodpecker.

van Dedem. Field observations on the Black-necked Grebe (one photo).

Hens, P. The migrations of *Turdus viscivorus*.

Laubmann, A. Quaternary nomenclature and Ornithology.

Journal für Ornithologie, vol. 70, 1922, no. 1.

Heyder, R. A supplement to an article on the birds of the Kingdom of Saxony which appeared in the same Journal in 1916.

Grote, H. On the birds of German S.W. Africa (separately noticed).

Tschusi zu Schmidhoffen, V. von. On the wanderings of Waxwings in Central Europe in 1920/21.

Gebhardt, E. Biographical notice of A. J. Jäekel (1822–1885).

Thienemann, J. 20th Report (for 1920) of the bird-watching station at Rossitten.

Fehringen, O. Bird-life in Macedonia.

Seilkopf, H. The function of the alula or bastard-wing of Birds-of-Prey as a steering organ in flight.

Stresemann, E. Note on Sicilian birds described by Rafinesque in 1814.

Journal of the Bombay Nat. Hist. Soc. vol. xxviii. no. 1, Dec. 1921.

Baker, E. C. S. The Game-Birds of India, Burma, and Ceylon, pt. 30 (concluded), with col. pl. of *Tropicoperdix chloropus*.

Baker, E. C. S. Birds of the Indian Empire, pt. iv. Families Zosteropidæ—Coraciidæ.

Osmaston, A. E. Habits and nidification of some birds in British Garhwal, with photographs and a map.

Ticehurst, C. B., assisted by P. A. Buxton and Major R. E. Cheesman. The Birds of Mesopotamia, pt. i; photographs but no map, which we hope will be provided later on.

Journal of the Nat. Hist. Soc. of Siam, vol. v. no. 1, Dec. 1921.

This volume will be devoted to the land-fauna of south-western peninsular Siam. The present part contains the first portion of the birds compiled by Messrs. Robinson and Kloss, and contains a map of the area under investigation.

Ornithologische Monatsberichte, vol. 30, no. 1, Jan.–Febr. 1921.

Spath, Prof. Occurrence of *Locustella luscinioides* near Danzig.

Dobbrick, L. Occurrence of *Emberiza cia* in Möhnetal, Westphalia.

Natorp, O. An abnormally coloured example of *Motacilla f. flava.*

Stresemann, E. *Collocalia l. lowi* and *Corvus coronoides* (*? andamanensis*) in Sumatra. Also four new subspecies from New Guinea and New Britain.

Heyder, R. Some critical notes on the second volume of Hartert's Vög. pal. Fauna.

Erhard, H. On the reappearance of the Golden Eagle in the Bavarian Alps.

Neumann, O. Two new African subspecies—*Anthreptes longuemarei neglectus* from Tanganyika Territory and *Serinus flavivertex sassi* from Lake Kivu.

Revue Francaise d'Ornithologie, vol. 14, nos. 153–4, Jan.–Febr. 1922.

Chabot, F. Notes on birds breeding in the chalk cliffs between Havre and the Somme.

Dalamain, J. On spring migration in the Charente district in 1921.

Lavauden, L. Description of *Falco blancheti*, sp. n. from southern Tunisia.

Menegaux, A. On the absence of xenie from the egg of the Ostrich.

South African Journal of Natural History, vol. 3, no. 1, Jan. 1921.

James, H. R. Notes on birds in the Cradock and Tarkastad districts of the Cape Province, with nesting dates.

Millar, A. G. The nesting-habits of the Trumpeter Hornbill, *Bycanistes buccinator*.

Townsend, F. S. On the eggs of *Coccystes cafer*, parasitic on *Crateropus jardinei*.

Tori, Tokyo, vol. iii. Apl. 1921.

Kuroda, N. The moulting of some Charadriine birds, with photos.

Uchida, S. Notes on two stragglers—*Panurus b. russicus* and *Turdus atrigularis*, with drawings.

Momiyama, T. On the habits of Richardson's Skua, with a sketch.

Nakao, H. Birds seen in the city of Hiroshima.

Obituary notice and portrait of the late Dr. Isao Ijima, President of the Ornithological Society of Japan.

Verhandl. Ornith. Ges. in Bayern, vol. xv. pt. 1, Apl. 1921.

Lauterborn, R. Red-crested Pochard breeding on the Lake of Constance.

Schwann, A. The connection of bird-song with meteorological conditions such as light, temperature, electricity, wind, etc., etc.

Schalow, H. On the occurrence of the White-headed Duck (*Erismatura leucocephala*) in Thuringia.

Bacmeister, W. On the occurrence of the Oyster-catcher in Wurtemberg.

Schlegel, R. Researches on the Long-tailed Titmouse of Saxony, *Ægithalos caudatus europæus*: its status and distinctness.

Hoffmann, B. Voice and song of the Yellow-hammer, *Emberiza citrinella*.

Zumstein F. The Ortolan Bunting, a breeding bird in the Palatinate.

XXII.—*Letters, Extracts, and Notes.*

Little Ringed Plover in the Balearic Isles.

Sir,—Until March, 1921, this species apparently had not been recorded from Majorca, for v. Jordans had not observed it and only quoted Homeyer writing of it as the rarest plover, and some general remarks about it.

In 1920 I sent to the Rev. F. C. R. Jourdain some eggs I obtained here, which closely resembled Little Ringed Plovers', but from which I had certainly identified the birds as Kentish Plovers. Mr. Jourdain at once questioned the identification of these eggs, but I was able to assure him that, without doubt, the birds from these nests were Kentish Plovers.

I had hoped to find the Little Ringed Plover here, and looked for it carefully, but in 1920 not a single bird of this species was seen in the district; nor until March 1921 did I observe any, when, as I have stated in the "Birds of Alcudia" (Ibis, 1921, p. 712), a few small parties passed through the district, but I do not think that more than three pairs remained to nest: and one of these pairs, whose nest I found on the unusually early date of 16 March, in the area affected by the Kentish Plovers, entirely disappeared after their eggs were taken. The two other pairs nested in a locality quite outside that where the Kentish Plovers breed.

To make sure that my identification of the eggs, which Mr. Bunyard questions, was correct; in one instance, where the nest contained two eggs only, so closely resembling Little Ringed Plovers' that I hoped they might belong to that species, I left them for some days in order that more might be laid, and that I might have more opportunities of identifying the birds; I was able, therefore, daily to put the bird off its eggs, and to make sure to which species it belonged. There was not the least doubt that it was a Kentish Plover, and it was quite unnecessary to shoot it, as it is comparatively tame at its nest, while the Little Ringed Plover is quite the opposite.

It does not appear to me possible that Kentish Plovers should appropriate the eggs of Little Ringed Plovers, as this was not a solitary instance, for altogether five nests of these eggs which Mr. Bunyard questions were found in 1920, and yet not a single Little Ringed Plover was observed in the district in that year.

Messrs. Jourdain and Witherby were quite justified in assuming that these eggs, which so closely resemble Little Ringed Plovers', were Kentish Plovers', because of my assurance to the former that they belonged to that species, and neither Mr. Witherby nor any observer had recorded the Little Ringed Plover from this island before 1921.

PHILIP W. MUNN.

Puerto Alcudia,
Majorca.
30 January, 1922.

SIR,—When I exhibited the eggs of the Kentish Plover taken by Captain P. W. Munn in 1920, which closely resembled those of the Lesser Ringed Plover, no nests or eggs of the latter species had ever been found on the island although Capt. Munn had searched carefully for them. In 1921 he discovered two pairs and was at once struck by the dissimilarity of the notes and habits of the two species.

As Mr. Bunyard frankly admits that he has never seen the Lesser Ringed Plover or its nest, and that his knowledge of the eggs is based solely on specimens obtained by purchase or exchange, it is difficult to see how his opinion can carry any weight when opposed to that of experienced field naturalists who are well acquainted with both species. It has now been proved by the observations of reliable ornithologists that the Kentish Plover occasionally lays eggs of the type normally associated with the Lesser Ringed Plover, and also that the Lesser Ringed Plover lays eggs spotted and streaked with black like those of the Kentish Plover.

Ground-building birds, when kept off their eggs for any length of time, may for brief periods brood eggs of other

species till driven off by the rightful owners, but such cases are quite exceptional and no field worker is likely to be misled by them. The statement that the Bar-tailed Godwit "will brood the eggs of the Whimbrel" rests on the statement of a dealer-collector, which is in all probability correct; it is, however, not a well-known habit but a quite exceptional occurrence.

If Mr. Bunyard's arguments are to be taken seriously we may look forward to statements in 'The Ibis' that the blue type of egg of the Spotted Flycatcher is really that of the Pied Flycatcher; or that blue eggs of the Blackbird are really those of the Thrush. Authenticity in future must not depend on the incubating bird, but will be settled by reference to a small series of normal eggs selected by Messrs. Schlüter and Kürickeldorff, and field work in Oology will become superfluous.

F. C. R. Jourdain.

Appleton Rectory.
6 February, 1922.

Illogical Rules of Nomenclature.

Sir,—The subject of Zoological Nomenclature is world-wide, therefore we should well ventilate world-wide opinions thereon. Nevertheless, the subject is somewhat unimportant. It has, in certain quarters, been boomed into one of great importance. Indeed non-scientific Rules have been boomed so largely as to almost eclipse science itself—the science of Ornithology at all events.

Consequent upon the Great War the International Commission is defunct and may never more be revived, except perhaps as an English-speaking people's Commission. Therefore the Rules of the "International Commission" so-called are like useless police statutes without magistrates and police officers to administer them.

The time appears opportune to make changes in the rules, especially those that are mischievous, or do not work smoothly, or are irritating to practical workers.

'The Ibis' was good enough to publish a letter of mine on the fallacy of absolute bed-rock priority instead of in some cases an *authoritative* name *. May I venture to follow on with the "pre-occupied" name, so-called, or Article 36. This is a mischievous rule.

That a pre-occupied name, if in use cannot be used for another species is sound common sense. The same name cannot logically be applied to two different species, at the same time.

But suppose the older (similar) name is obsolete—never now used—and is amongst the "bygones"—what then? There cannot possibly be any confusion in retaining the commonly current name for a well-known species, compared with the confusion caused by abolishing it in favour of some new name. Take for instance the Cassowary—*Casuarius australis*. It is extremely doubtful if that name ever was, but now never is, applied to the Emu (*Dromaius novæ-hollandiæ*), therefore it is as dead as Julius Cæsar and leaves but the one name *Casuarius australis* (for the Cassowary) in the world of knowledge to-day.

"Rejected hononyms can never be again used" literally means, that a name applied to describe one thing and the use of which to describe a second thing has been rejected, can never be used again.

Therefore the rule does not, in fact, cover the ground intended, but in the narrow interpretation which has been given to it, it goes much further than was ever intended.

By "narrow interpretation" I refer, for instance, to the strict ruling whereby a name which has been applied in an isolated case to describe a species in some remote age by some obscure writer, is by reason of such action rejected from application to another species though it may have been commonly used to refer to the later species by a number of writers over a very considerable period. That seems to me to be reducing a sound common-sense rule to an absurdity.

* 'The Ibis,' 1920, p. 510.

I would suggest that the rule be altered to read somewhat as follows :—

> "Where a name has been once recognized and is still in use as describing a particular genus or species, that name cannot be used to describe any other genus or species."

There can be no occupation where no actual pre-occupation exists. Where no actual occupation occurs there cannot be, in point of fact, any homonym. A house cannot be occupied if no one lives therein.

Another mischievous rule. It is stated that "an undeterminable name cannot be described and validated by any one." Surely this is most arbitrary and contrary to the righteous spirit of priority. Because the history of the commonly used name is lost, why create a new one, if the old name has been properly described and validated *by usage* and in literature, say, for instance, the genus *Misocalius* in the British Museum "Catalogues"? * The thing is illogical. Extremists may protest, but in the long run they must submit to the final arbiter—*common usage* and *common sense*, especially where no legal aspect is involved, much less a scientific one.

Yours very obediently,

A. J. Campbell,
Colonial Member B. O. U.
Honorary Fellow A. O. U.

Melbourne,
Australia.
7 January, 1922.

The Annual General Meeting of the British Ornithologists' Union.

The Annual General Meeting of the British Ornithologists' Union for 1922 was held on Wednesday, March 8, at the Offices of the Zoological Society of London, Mr. W. L. Sclater in the Chair.

There were 37 members present.

* Cat. Birds Brit. Mus. xix. p. 279.

The Minutes of the last meeting were read and confirmed.

The recommendation of the Committee that "There being no member of the Committee with three years' service, in accordance with the decision of the 13th of May, 1921, no new members be appointed this year" was carried unanimously after the Rev. F. C. R. Jourdain, who raised the question, had been informed that the Committee had agreed that Dr. P. Lowe first, and then the present Committee in alphabetical order, should retire in accordance with the terms of the present rule.

The following Foreign Members were elected Honorary Members :—

Prof. Dr. A. J. Einar Lönnberg, F.M.Z.S. (Sweden).
Herluf Winge, C.M.Z.S. (Denmark).

The following were elected Foreign Members :—

Baron R. C. Snouckaert van Schauburg.
Mons. Louis Lavauden.
Dr. Wilfred H. Osgood.
Mr. W. de Witt Miller.
Dr. E. Lehn Schiøler.

The following Ordinary Member was elected Colonial Member :—

Major Allan Brooks.

The Chairman then called upon the Secretary to read the Report of the Committee for 1921, viz. :—

"The Committee have to report that during the year 1921 they have been able to reduce the adverse balance of £190 to £88, but they regret that they are still unable to consider the financial position to be in any way satisfactory.

"The raising of the subscription to £2 per annum has been well received, as may be seen by the steady increase in the strength of our membership. A few members still continue to pay only £1 or £1 5*s.*, but these do not receive 'The Ibis' and merely continue to remain as members of

the Union. There have been very few resignations on account of the increase in the subscription, but, on the other hand, the Committee regret that there have been a considerable number of resignations due to the fact that members have, owing to the present amount of taxation and the general depression in money matters, cancelled their membership from all Scientific Societies including our own.

"The Committee feel that it is still very necessary for members to assist in bringing forward suitable candidates for election, and it is only by increasing our membership that we shall eventually be able to furnish the funds which are necessary for so many desirable objects, chief amongst which they would mention the publication of the 'Systema Avium.'

"The present volume of 'The Ibis' is the sixty-third, and is the third of the Eleventh Series. It contains only 799 pages as against 1022 in the previous year, and it is illustrated with only two coloured plates, seven uncoloured, and four text-figures. The comparative cost is, unfortunately, even higher than in 1920, the actual reduction being only about £85. In 1922 we hope to see a real reduction, although the cost of printing, both letterpress and plates, is not following the general rapid decrease of costs in other trades.

"The Committee regret to report the deaths of the following:—

Ordinary Members:

Dr. W. S. Bruce. Col. H. W. Feilden.
H. M. Upcher. Col. W. W. C. Verner.
Col. R. G. Wardlaw-Ramsay.

Honorary Members:

Dr. V. Bianchi. Dr. J. A. Allen. J. Macoun.

Foreign Member:

S. Alpheraky.

"The following gentlemen have resigned :—

C. F. Archibald.	H. R. Munt.
J. C. Baker.	S. A. Neave.
Hon. R. Bethell.	H. Parker.
A. H. Cocks.	W. H. Patterson.
Dr. H. N. Coltart.	Col. R. H. Rattray.
J. B. Dobbie.	Capt. R. C. Staples-Browne.
P. E. Freke.	
Earl of Gainsborough.	G. S. Steward.
O. Grabham.	Col. R. W. Studdy.
H. E. Harris.	A. Thorburn.
R. J. Howard.	H. S. Watt.

"The membership of the Union is given in comparison with the last five years :—

	1922.	1921.	1920.	1919.	1918.	1917.
Ordinary Members...	446	423	418	418	423	416
Extraordinary ,, ...	1	1	1	1	1	1
Honorary ,, ...	8	9	9	7	8	9
Hon. Lady ,, ...	8	8	8	8	8	9
Colonial ,, ...	9	10	10	9	9	10
Foreign ,, ...	17	16	16	13	20	19

"There are 28 candidates for ordinary membership, and the Committee regret that there is not a very much larger number.

"As you have already been informed in the notice convening the meeting, the Committee, on your behalf, are presenting to-day to Dr. W. Eagle Clarke the Godman-Salvin Medal in recognition of the splendid work he has done in reference to migration."

Mr. F. J. Waydelin, remarking on the resignations, suggested that a number of members had resigned and certain persons had also objected to joining the Union for the reason that large numbers of eggs had been exhibited at meetings (*vide* the Bulletin of the British Ornithologists' Club) which was contrary to Rule 7 of the Union.

The Hon. Secretary explained that this matter had already been brought to the notice of the Committee who were dealing with the subject. Further, that the Union were not responsible for the actions of the British Ornithologists' Club, although the members of the latter were all members of the Union.

In reply to a member, the Hon. Secretary stated that the amounts shown as returned subscriptions on the Balance-sheet were duplicate payments on account of the non-cancellation of old Bankers' Orders.

The Report and Balance-sheet were then approved and passed.

The recommendation of the Committee that "Members be permitted to compound their subscriptions on the following scale:—

	£	s.
Members under 45 years of age	35	0
„ of 45 to 50 „	32	10
„ „ 50 to 55 „	30	0
„ „ 55 to 60 „	25	0
„ „ over 60 „	20	0 "

was discussed and approved after an agreement was reached to insert in the new rule a proviso that the capital so obtained should be invested and only the income used as revenue. The Committee were authorized to formulate a rule for submission to a General Meeting at some future date.

The Committee's recommendation that

> "Vice-Presidents, two in number, shall be elected "annually, but any member so elected shall not be "eligible for re-election to the Vice-Presidentship in "the year following his retirement"

was carried *nem. con.*, and Mr. W. L. Sclater and Lord Rothschild were unanimously elected to the new Vice-Presidentships. This will necessitate the alteration of Rule 11 to read as follows:—

> "The business of the British Ornithologists' Union "shall be conducted by a Committee consisting of the "President, two Vice-Presidents, Secretary, Editor

"of 'The Ibis,' and six members to be elected at the "Annual General Meeting. The Vice-Presidents shall "be elected annually, and no member so elected shall be "eligible for re-election to that Office in the year fol- "lowing his retirement, &c., &c."

After Messrs. H. Kirke Swann and H. F. Witherby had been elected and had consented to act as Scrutineers, the following 28 candidates for Ordinary Membership were balloted for and duly elected :—

Wing-Commander Henry Le Marchant Brock, D.S.O.
Seabury Burdett-Coutts.
James Paul Chapin.
Denis Cox.
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Charles Gore Young.

The decision of the Committee to present the Godman-Salvin Medal, instituted in memory of Dr. Godman and Mr. Salvin, and to be given from time to time for distinguished ornithological work, to Dr. W. Eagle Clarke, I.S.O., LL.D. (late President of the Union), was greeted with enthusiasm, and the Medal was duly presented by the Chairman, who gave a sketch of the extent of Dr. Eagle Clarke's researches in connection with bird-migration.

Dr. Eagle Clarke expressed his profound appreciation of the honour bestowed upon him, which, he stated, would form a deeply-valued recognition of many years of toil amidst statistics, and of days and nights spent in lighthouses, on islands, etc., devoted to bird-watching from which he had derived infinite pleasure.

Before the close of the Meeting the Chairman explained that the absence of the President was due to indisposition, which Mr. Elwes thought would necessitate his resignation from the Presidentship. The Committee had considered the matter and had agreed that the interests of the Union would be best served by his continuance in the Office of President for at least another year. The Meeting approved of this, and expressed the hope that Mr. Elwes's health would improve to enable him to continue the able discharge of his duties.

Captain H. S. Gladstone proposed and Dr. P. R. Lowe seconded a vote of thanks to the Zoological Society for the use of the Meeting Room.

Major A. G. L. Sladen proposed and Dr. H. Langton seconded a vote of thanks to Mr. H. Munt, the Auditor.

Dr. W. Eagle Clarke proposed and Mr. T. Iredale seconded a vote of thanks to the Chairman.

These were carried with acclamation.

The Annual Dinner after the Meeting was attended by considerably over 100 members, the guests of the evening being Dr. Eagle Clarke and Dr. de Beaufort, Hon. Secretary of the Netherlands Ornithologists' Union.

The McConnell collection of British Guiana birds.

This collection, which formed the basis of Mr. Chubb's two volumes on 'The Birds of British Guiana,' the second one of which has just appeared, was made by the late Mr. Frederick Vavasour McConnell when he was residing in that colony. It consists of about 7000 skins, representing over 700 species, and took some 25 years to collect. It has now been presented by his widow, Mrs. McConnell, to the Natural History Museum, and is one of the most valuable additions that have been made to the collection of birds in that institution for some time past.

Bird Sanctuaries in the London Parks.

Arrangements have recently been made by a committee appointed by H.M. Office of Works and presided over by Sir Lionel Earle, K.C.B., to form two small areas in Kensington Gardens and Hyde Park into reserves suitable to encourage the nesting of small birds. This is chiefly to be effected by excluding gardeners, as well as the public, and allowing nature to take its own course in the matter of the growth of natural herbage and undergrowth. One of the enclosures is to the north of the Powder Magazine and contains in the centre greenhouses and potting-sheds concealed from public view. The other runs along the eastern side of the Serpentine between the bridge and the fountains. Whitethroats, Willow-Wrens, Hedge-Sparrows, Wagtails, and Sandpipers are all expected to take advantage of these enclosures.

Importation of bird-skins for scientific purposes.

From the Board of Trade we have received the following notice :—

"As from the 1st April, 1922, the importation into the United Kingdom of the plumage of birds not expressly excepted under the Act will be prohibited. The Board of Trade may, however, under Section 2 (4) of the Act 'grant

to any person a licence subject to such conditions and regulations as they may think fit authorising the importation of plumage for any Natural History or other Museum, or for the purpose of scientific research or for any other special purpose.' "

All applications for licences under this sub-section should be addressed to the Imports and Exports Licensing Section, Board of Trade, Great George Street, Westminster, S.W. 1.

Board of Trade,
7th February, 1922.

Personalia.

Mr. Bates writes on 30 October last that he has just returned from a journey through the inland parts of Cameroon, traversing the same region as did the German Expedition under Riggenbach of 1908. Mr. Bates reached a place called Genderu, his farthest point, but most of his collections were made on the high plateau of Tibati or in the neighbouring mountains. Tibati is marked in Stieler's Atlas; it is about 300 miles inland from Duala, the capital of Cameroon, in a north-easterly direction. He has sent home a collection of bird-skins and a few mammals, which will be examined and reported on by Mr. Bannerman, and there are likely to be some novel forms among them—at any rate, to English Ornithologists.

We learn that Captain Hubert Lynes, R.N., and Mr. Willoughby Lowe are about to start on their homeward journey and expect to be in England early in May. They have been in Darfur since February 1920.

Mr. Hugh Whistler, of the Indian Police, writes us that since his return to India he has been stationed at Dharmsala, in the Kangra district of the Punjab. It is a most interesting district to the ornithologist, extending from the borders of Tibet to the plains of the Punjab, and he hopes to do some valuable work there. He has already secured some 700 skins and many eggs of considerable rarity.

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National Museum

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XXIII.—*The Birds of Jhang District, S.W. Punjab.* Part II. *Non-Passerine Birds.* By HUGH WHISTLER, F.Z.S., M.B.O.U., Indian Police *.

Micropus affinis (Gray). (2 skins.)

A common and generally distributed species, met with throughout the year in varying numbers ; one month it will not be seen at all, another time it is general and common, and at another time scarce and local ; but such fluctuations are quite erratic, and are doubtless due not to migration, but to questions of the food-supply. It is a bird of towns and villages, breeding in the house-roofs and hawking above them, but I found a large colony of old nests in the small hills about Yakkuwala.

Micropus melba (L.).

Two Alpine Swifts were seen hawking above the Civil lines on the evening of 25 August, 1919.

Caprimulgus europæus unwini Hume. (3 skins.)

Nightjars are scarce in the district ; single birds of this species were shot at Kot Lakhlana on 27 September, 1918, at Jhang on 3 May, 1919, and at Chund on 20 August, 1919.

* Continued from p. 309. For map, see Text-figure 9, p. 260.

Two other birds seen but not obtained at Muradawala on 4 November, 1917, and at Winoka on 1 August, 1919, were probably also of this species. It is doubtless only a passage migrant.

Caprimulgus monticola Frankl. (1 skin.)

A female was shot in the borrow-pits that border the railway at Chund on 20 August, 1919.

Merops persicus persicus Pallas. (11 skins.)

The Blue-cheeked Bee-eater is a very common summer visitor to the district; it was first observed on 8 May, 1918, and on 24 April, 1919, and from then onwards remained common till the end of September. A few birds remain into October, the latest record being 13 October, 1918. In both years a large flock roosted in the trees of the Dak Bungalow at Jhang, and females shot from this flock in the latter half of May had large eggs in the ovaries, but in spite of much endeavour I was unable to locate any nests. The number of these roosting birds, however, dwindled greatly by the end of the month, when doubtless most birds slept in their nest-holes.

(It is difficult to distinguish *M. persicus* and *M. philippinus* in the field, but although the latter species may appear in the district, all the large Bee-eaters which I was able to identify satisfactorily belonged to *M. persicus*.)

Merops orientalis beludschicus Neum. (11 skins.)

The status of this Bee-eater is interesting. During the winter months it is to be found in small isolated colonies which, in some cases, certainly occupy the same locality year after year. About the middle of February large numbers of migrants appear on passage, and remain about during March and the earlier days of April. After they have passed on, the species is found generally distributed and breeding, until about June there is apparent a great increase in its numbers, due to the fledging of the young birds. These numbers rather obscure the situation, but apparently an autumn passage

arrives in August and vanishes again in September, leaving only the few colonies which remain throughout the winter. The species is gregarious at roost. I have observed a small party feeding in company with a flock of Rosy Pastors; these latter were feeding along some ground covered with "Lana" scrub, while the Bee-eaters perching on the ground or the "Lana" moved with the Pastors, and caught in the air those grasshoppers and insects which escaped by flight from the blundering efforts of the larger birds.

A very beautiful lutino variety obtained by me at Jhang on 9 June, 1919, has been described in the Journal Bombay N. H. S. vol. xxvi. p. 844.

Upupa epops epops L. (6 skins.)

The European Hoopoe appears in the district on the autumn migration about the middle of July and becomes abundant in August, its numbers reaching their greatest height in September. The majority of these birds pass on by the end of the month, but the species remains fairly common during the winter until about February. A few individuals were seen in March and April, but none in May or June, and but few, if any, pairs can remain to breed in the district.

Coracias garrulus semenowi Loudon & Tschusi. (12 skins.)

This form of Roller appears in considerable numbers on the autumn migration, and may then be met in small flights of some half-dozen individuals or singly. It is found anywhere in open country, but is most partial to the wide plains that form the riverain of the Chenab River, where it perches on isolated Kikur-bushes or on the "Uck" plants that are typical features of this ground. The favourite food is a large, coarse, highly-coloured grasshopper which is found on the "Uck," but whose name I have not ascertained. The earliest date on which I have seen it is 25 July, 1919, and the latest date is 25 September, 1918. Adults and immature birds arrive in equal numbers, and the former are then undergoing complete moult.

Coracias benghalensis benghalensis (L.). (4 skins.)

The Indian Roller is a generally distributed resident in small numbers, augmented in summer by an immigration of birds which arrive to breed in the district. As is so frequently the case under such circumstances, I was unable satisfactorily to fix the date of arrival and departure of these immigrants, but pairing begins about the middle of February and eggs were taken in May. To some extent Rollers are gregarious at roost.

Ceryle rudis leucomelanura Reichenb. (2 skins.)

A resident species, and common all along the Jhelum and Chenab rivers, but seldom met with away from them.

Alcedo ispida pallasii Reichenb. (1 skin.)

Observed only as follows :—

1918. 19 February. One near Chund bridge.
1918. 19 December. One at Nurpur Escape.
1919. 20 August. An adult female, shot near Chund bridge.
1920. 21 January. One at Nurpur Escape.

The single specimen obtained agrees well with other examples of this race in my collection from Kashmir and the subalpine Punjab.

Halcyon smyrnensis smyrnensis (L.). (3 skins.)

A somewhat scarce resident, but inclined to move about rather within the district.

Dryobates scindianus (Horsf. & Moore). (1 skin.)

A pair seen about the canal escape at Asabha on 25 and 26 September, 1918, were the only Pied Woodpeckers observed actually within the boundaries of the district; two or three were, however, seen at Sang jheel (just over the border in the Multan District) on 25 December of the same year.

Liopicus mahrattensis (Lath.).

A resident in small numbers and generally distributed throughout the district.

Brachypternus aurantius dilutus Blyth. (2 skins.)

A resident but very sparingly distributed species, only met with here and there, and nowhere common.

Jynx torquilla L. (3 skins.)

The Wryneck is a fairly common winter visitor from November until March. The following records of single birds observed point to the existence also of a spring and autumn passage—viz., 1918, 14 and 20 September; 1919, 3 April, 27 August.

Cuculus canorus L.

Observed on the spring migration in 1918 at Jhang on 10 and 16 May, and in 1919 at Chund bridge on 7 April. One was seen on the autumn migration of 1919 at Chiniot on 6 August.

Coccystes jacobinus (Bodd.). (1 skin.)

The Pied Crested Cuckoo is a late summer visitor to the district. Comparatively few were seen in 1918, but the species was common in 1919, the earliest and latest dates for it being 3 June and 17 September. Newly-fledged nestlings, attended by *Crateropus terricolor*, were seen on 1 August and 17 September. The former would have fallen a victim to some Crows had I not interfered.

Eudynamis orientalis honorata (L.). (1 skin.)

To one accustomed to the abundance of the Koel as a summer visitor in most districts of the Punjab, its scarcity at Jhang was most surprising. In 1918 a male on 16 September was the only one recorded. In 1919 a pair or two were frequenting the Civil lines between 5 May and 18 July, and a single male was seen as late as 26 October. None were seen away from headquarters.

Centropus sinensis maximus (Steph.). (1 skin.)

A resident, generally distributed and fairly common. Eggs were taken in July and August.

Palæornis eupatria nepalensis (Hodgs.). (2 skins.)

The Alexandrine Parrakeet is an abundant resident, generally distributed and noticeable everywhere from its marked habit of "flighting" to roost. It is particularly partial to the rest-house gardens along the canals, breeding in the roofs of the bungalows and roosting in large numbers in the trees around them. Eggs are laid in February and March, the usual clutch consisting of three to five eggs. Sixteen eggs yield the following measurements :—Length 34–38 mm., breadth 27–31 mm.; average 35·2 × 28·8 mm.

Palæornis torquatus (Bodd.). (3 skins.)

Generally distributed, resident, and even more abundant than the last species, whose evening flight and roosting-places it shares, although the two species do not combine into joint flocks. Eggs are laid in March.

Palæornis cyanocephalus cyanocephalus (L.).

I saw a single male of this species amongst a number of *P. nepalensis* and *P. torquatus* collected to roost in the garden of the canal rest-house at Muradwala in November 1917.

Tyto alba javanica (Gm.). (1 skin.)

A single pair of Barn-Owls were flushed from a hole in a huge Bhor-tree behind the rest-house at Chund on 19 February, 1918, and the climber reported a single egg in the hole. I was unable to visit the place again personally, but an orderly whom I sent to secure the clutch on 3 March brought back one of the parent birds and reported that there were no eggs in the hole.

Bubo benghalensis (Frankl.).

Only occurs in the district on the small hills near Yakuwala, where a single bird was seen on 23 February, 1919, and a pair on 2 August, 1919. One of these latter, when disturbed, sat on a rock in the open, bowing and squawking at me. I found its eyrie in a hollow between some rocks, and the pellets that lay around were found to contain many remains of *Tatera indica*, the Indian Gerbille.

Bubo coromandus (Lath.). (1 pullus.)

A sparsely distributed resident. An addled egg and a nestling in down were taken at Kadirpur on 27 January, 1920, from a nest at the top of a huge Kikur-tree, from which I had taken an egg of *Otogyps calvus* on 14 November, 1918.

Asio otus otus (L.). (1 skin.)

A party of five or six Long-eared Owls were found resting in tamarisk bushes in the middle of a jheel at Massan on 20 December, 1917. Two were seen in a bush at Nurpur jheel on 19 December, 1918. A winter visitor only.

Asio flammeus Pontopp.

The Short-eared Owl is a winter visitor only and was observed as follows :—1917 : 7 November, two at Ver ; 6 December, one near Hir's tomb, sitting on the ground in the sun at 3 P.M. 1918: 22 March, one at Ghar Maharajah; 18 October, one near Hir's tomb.

Athene brama tarayensis (Hodgs.). (3 skins.)

A common and generally distributed resident. Lays in March.

Falco peregrinus calidus Lath.

During the winter months an occasional Peregrine is to be met within the riverain area or in the neighbourhood of any jheel where Duck are to be found ; on more than one occasion my trained birds have been interfered with by such wild birds. My earliest and latest dates for the species are 7 November, 1917, and 19 March, 1918, but on 20 August, 1919, a native gentleman interested in falconry informed me that he himself had seen a Peregrine that morning ; so there is probably an autumn passage also.

Falco peregrinus babylonicus Scl. (1 skin.)

The Shahin is the earliest of the larger Falcons to appear in the district. I have seen an adult female on 29 August, 1919, and an adult male on 14 September, 1918 ; and on

31 October, 1917, killed a very fine old female which had been seen about for several days and had given trouble to my trained birds at exercise in the mornings. My only record for November is a doubtful one. On 11 December, 1918, an immature female was netted—and afterwards trained—by my falconer. Two other records for December 1917 refer probably to the same bird as the November one, and were similarly not fully identified. One was reported by my falconer on 23 January, 1918. All the above records refer to Jhang-Maghiana. On 16 February, 1918, I saw a female at Kot Wasawa.

Falco cherrug cherrug Gray.

The Saker Falcon appears to be but a scarce winter visitor to the district, as I only personally saw one in a wild state, which came up, attracted by the exercising of my trained Falcons, to the lure and circled low over our heads on 14 December, 1918, at Massan. Capt. C. B. Ticehurst was then with me. I saw two partly-manned Sakers which were said to have been caught near Sheikhan and Lalian respectively in February 1918 and January 1919, and my falconer reported seeing a wild bird at Wer on 5 November, 1917.

Falco jugger Gray. (3 skins.)

A resident, and generally distributed in small numbers throughout the district, but by no means as common as in the plains of the south-east Punjab about Hissar.

I found in all six nests of this Falcon as follows :—

1918. 27 March. C/2 hard-set eggs ; the nest was some 25 feet from the ground in a tamarisk-tree standing with a few other scattered trees on the plain near Shorkot city. The nest was probably an old Kite's nest—a bulky structure of sticks with a lining of dirty rubbish. Eggs 48·5 × 38·5, 49·5 × 39·5 mm.

1918. 10 May. Three well-feathered young in an untidy, straggling nest placed some 18 feet from the ground in a Jhand-tree standing amongst wheat at Jhang.

1919. 22 March. C/3 hard-set eggs, taken at Mochiwala from a nest on a side bough of a Kikur-tree in cultivation near a canal—the same tree from which I took C/4 Raven's eggs on 4 February, 1918. Eggs 48×40·5, 47·5×39·5, 46×39·5 mm.

1919. 30 March. Three nestlings in down; the nest was a large, untidy structure about 20–25 feet from the ground on a main bough of a Jhand-tree. The tree was about 50 yards from the railway at Chund and about 100 yards from a rest-house.

1920. 4 March. C/3 incubated eggs, taken from a large and ancient-looking nest, probably originally that of a Neophron, in a large Kikur-tree standing in cultivation about 100 yards from a hut. Eggs 48·5×38, 50·5×39·5, 49×39 mm.

1920. 10 March. C/3 fresh eggs, taken from a large nest on a side bough of a Jhand-tree standing in some sand-hills near Jhang; from this nest I took a Neophron's egg on 10 May, 1918. Eggs 51×39, 51×38·5, 52×39·5 mm.

Falco subbuteo L. (1 skin.)

I have seen undoubted examples of the Hobby as follows:—6 August, 1919: one at Kot Wassawa; 26 September, 1918: one shot at Asabha; 11 December, 1917: one at Jhang; 2 March, 1919: one at Jhang. My other records for October, March, and November refer to birds which were not identified beyond possibility of error.

Falco æsalon pallidus (Suschk.). (2 skins.)

I have the following records for the Merlin in Jhang District:—

1917. 1 November. One seen by me near Sheikh Chur.

1918. 5 April. Imm. ♀, shot on plain behind the Cemetery at Jhang.

1920. 12 January. Ad. ♂, shot on the same plain; a beautiful *pallidus* ♂.

1920. 13 January. Another seen at the same place.

Falco chicquera Daud. (1 skin.)

A resident and generally distributed species in small numbers. On one occasion I saw a pair chasing a Snipe, and another bird was seen hawking at bats at dusk.

Falco tinnunculus tinnunculus L. (3 skins.)

The Kestrel is a common winter visitor to the district, arriving early with the autumn passage and remaining on until well into the spring passage with no apparent change in its numbers. The first dates for its appearance were: 9 September, 1918; 24 August, 1919. It was last seen: 13 April, 1918; 6 April, 1919.

Aquila heliaca helica Sav. (1 skin.)

The Imperial Eagle is doubtless a not uncommon winter visitor to the district, as many must escape notice among the multitudes of *A. r. vindhiana*. I have six records for December and January of the type represented by the only skin preserved—that is to say, a large dark chocolate bird with a bright golden crown. Only one of these had white feathers on the scapulars.

[**Aquila nipalensis nipalensis** Hodgs.

Some of the larger Eagles observed during the winter months were doubtless Steppe Eagles, but no specimens were actually procured. On 24 February, 1920, I witnessed a performance by a larger Eagle—probably of this species or the last. I was out riding in the evening on the plain near Hir's tomb, and seeing the Eagle standing on the ground, rode towards it. It immediately lay down on its breast with the head up (after the attitude in which Neophrons rest on the ground), and remained squatting like that while I rode round it twice at a distance of about 10 to 15 yards, while it turned its head to watch me. I then deliberately put it up, and after flying a short distance it settled on the ground, walked up to a small desert plant and squatted beside it after the manner of a Bustard, but in the attitude already described. I flushed the bird once or twice again and could see no sign

that it was injured or unwell, but it was reluctant to go far, probably intending to sleep on the plain there.

Aquila rapax vindhiana Frankl. (4 skins.)

The Indian Tawny Eagle breeds very commonly in the district from December until February, building its nest in nearly all cases on Kikur-trees standing in or near cultivation. It is a resident species.

Fourteen eggs yield the following measurements:—Length 63–72·5 mm., breadth 49·5–54; average 67·2 × 52·4 mm.

Hieraaëtus fasciatus fasciatus (Vieill.).

A pair of Bonelli's Eagles were observed every winter in the neighbourhood of the Massan jheels, where they were doubtless resident although I was quite unable to find the nest. An occasional bird seen in Jhang city on the one side and at Kadirpur on the other may have been one of the above pair, as they doubtless wander some distance from the eyrie, and the species was not otherwise seen in the district.

Buteo ferox ferox (Gm.). (1 skin.)

The Long-legged Buzzard is a winter visitor to the district, common from November until the end of February. The earliest and latest dates on which it was seen were 23 October, 1917, and 18 March, 1918. During the winter of 1919–1920 it was unusually scarce, and I only saw three individuals in all. The majority are of the pale form, but a very fine example of the black phase was shot on 8 November, 1917 (S. R. No. 2034), and one or two other examples of it were seen.

Circus pygargus (L.). (2 skins.)

On the spring migration of 1918 several of these Harriers were noted between 30 March and 12 April in the neighbourhood of Jhang, all on the bare plain that stretches about Hir's tomb. On one evening a party of three and on another evening a party of four were seen sitting on the ground, very loath to fly, as if they were tired migrants. A pair were secured and preserved; it is interesting that the male had powder-down patches but not the female.

Circus cyaneus (L.).

A grey Harrier with a bluish breast, seen at Massan jheels on 20 and 21 November, 1917, must have been of this species.

Circus æruginosus æruginosus (L.). (1 skin.)

A common winter visitor, first appearing in September but not becoming common until November; it remains until the end of March.

Circus macrurus (Gm.).

The Pale Harrier is a common passage migrant through the district in September and October and again in March and April. A few individuals are to be met with during the winter months.

[**Astur gentilis** (L.).

On 27 December, 1917, at Kadirpur, my head falconer reported that he had seen a Goshawk that morning while out exercising my Hawks. The statement was probably correct: at any rate, his identification would be satisfactory though his veracity might not be so. It is probable that the bird was an escape, as a good many trained Goshawks are kept in this part of the Punjab, and on one occasion an escaped Goshawk was brought in to me by some villagers when I had lost a Peregrine and had advertised the fact.]

Astur badius dussumieri (Temm.). (1 skin.)

The Shikra is a common and generally distributed resident, and individual pairs are very constant to their own territories. Eggs are laid in April.

Accipiter nisus (L.).

A winter visitor in small numbers, apparently from about October until March, with signs of a spring and autumn passage in April and August. Unfortunately, my notes on the species are not satisfactory, as it is often difficult to distinguish the Shikra from the Sparrow-Hawk in flight. No specimen was procured, so the actual race occurring remains in doubt.

Milvus migrans govinda Sykes. (4 skins.)

An abundant and generally distributed resident. Breeds about February.

[**Milvus lineatus** (Gray).

A very large Kite with conspicuous wing-patches was seen by me at Ludha Mani on 19 September, 1919. The specimen was not obtained, but I have little hesitation in referring it to this species.]

Haliastur indus (Bodd.). (1 skin.)

Only observed on the autumn migration of 1918, when three or four, both adult and immature, were observed about the Jaura Canal works from 8–10 August, and an adult was seen at Chund bridge on 31 August.

Haliaëtus leucoryphus (Pall.).

Pairs of Pallas's Fishing Eagle are to be met with throughout the whole extent of the riverain area, and occasionally they visit the canals and escapes. It would appear to be a resident species, wholly or in part, although higher up the Jhelum River near the Himalayan foot-hills it was only a breeding visitor in winter (*cf.* Ibis, 1916, p. 91). A nest with three eggs, taken near Chund bridge on 12 December, 1919, has been described in 'Bird Notes,' 1920, p. 22.

Elanus cæruleus (Desf.).

Black-winged Kites were seen as follows :—

1918. 18 March : one at Dab Kalan ; 13 October : one near Chund bridge.

1918. 27 July : one at Nurpur Escape.

Butastur teesa Frankl. (1 skin.)

A not uncommon resident, but probably also a summer immigrant. Nests were found in May.

Neophron percnopterus percnopterus (L.).

A common and resident species. There has been a certain amount of confusion regarding the distribution of the races

of this repulsive bird, owing to the natural hesitation of most observers to collect specimens. I accordingly took the trouble to shoot five adults in March and April from amongst the numerous nests examined; four of these were carefully sexed and measured (in millimetres), as follows :—

	♂.	♂.	♀.	♀.
Bill from front edge of cere to tip.	31·5	30	29	31
Gape to tip of bill	60	64	58	62
Depth of bill at front edge of cere.	—	14·5	14	—
Length of cere.....	31	29	29	36
Wing	462	483	463	476
Tail	238	238	242	247
Tarsus	88	87·5	86	86
Mid-toe without claw.....	62	65	70	68

Hartert gives the measurements of this Vulture as follows, without distinction of sex:—Wing 475–520, tail 255–280, tarsus 75–85, culmen from end of cere 31–35 mm. He notes that *N. p. ginginianus* differs from this race in the yellow bill and smaller size, especially of the foot and bill. Oates, on the other hand, emphasises the relative colour of the cere and cheeks in the two races.

Measurements are not always a satisfactory guide in such large birds, but I carefully recorded also the colour of the soft parts in the five birds shot. All had the bill clear horn-colour except one male in which it was dead horny-white, with a wedge-shaped blackish mark near the tip of the cutting-edge of the upper mandible. The cere and a patch of the facial skin extended to behind the eye and, including the front portion of cheeks, was a richer and deeper orange-yellow than the lemon-yellow tint of the remainder of the bare skin of the head and neck. The legs and feet were a dull pinky-whitish colour, the claws black.

Twelve nests were examined, six with two eggs or chicks, six with one; these were found on various dates between 31 March and 16 May. The nests were placed either in Jhand-trees or Banyan-trees.

Fourteen eggs yield the following measurements:—Length 59·5–69, breadth 47·5–52·5; average 63·9 × 50 mm.

Gyps fulvus (Habl.). (1 skin.)

Griffon-Vultures are to be met with occasionally during the winter months anywhere in the district, but their main stronghold is the small rocky hills near Yakkuwala, where they collect to rest and digest after a successful trip for food. I have seen them as early as 28 October, 1917, and as late as 4 March, 1918.

Ægypius monachus (L.).

This magnificent Vulture occurs in very small numbers as a regular winter visitor; it arrives about the middle of November (earliest dates 17 November, 1917; 19 November, 1918; 21 December, 1919) and leaves in February (latest dates 20 February, 1918; 21 February, 1919; 29 February, 1920). It is usually seen singly or in couples, but on one occasion (15 February, 1918) I saw four together, apparently two adults and two immature birds.

Otogyps calvus (Scop.).

The King Vulture is found in small numbers throughout the district, and is probably a resident species; but I have no actual records of it for the months of June and July. A nest with one fresh egg was found on 14 November, 1918.

Pseudogyps bengalensis (Gm.).

Breeds freely from December to March in the neighbourhood of the river from Massan to the southern boundary of the district. During the summer it appears to become somewhat scarce, but this may be due rather to the difficulties of observation at that season than to the species being partly migratory.

Ciconia ciconia (L.).

The White Stork occurs as a winter visitor in small numbers, being found singly about cultivation or in the neighbourhood of jheels. Not observed in Shorkot Tehsil.

It arrives about November (earliest dates 10 November, 1917; 18 November, 1918) and leaves again about February (latest dates 15 February, 1918; 28 February, 1919). It

is noteworthy that a flock of some twelve to fifteen birds was seen at Kadirpur on 13 February, 1918 : these were doubtless birds resting on passage.

Ciconia nigra (L.).

The Black Stork is a somewhat scarce winter visitor, and was observed as follows :—

1917. 25 December. Three at Pabbarwala.
1918. 16 December. Four at Massan.
1919. 10 December. Two at Massan.

Storks seen in the distance on 1 and 2 April, 1918, and 22 March, 1919, also appeared to belong to this species.

Pseudotantalus leucocephalus (Pennant).

A party of about a dozen Pelican-Ibis, mostly in immature plumage, were seen at Nurpur Escape on 27 July, 1919.

Dissura episcopus (Bodd.).

Only observed in the country on the right bank of the Chenab from Massan to Shah Jiwana. Here a few individuals were seen every year in the months of November to March. A nest containing four eggs was found near Pabbarwala on 25 December, 1917 (as recorded in the Journal Bombay N. H. S. xxv. 1918, p. 746).

Xenorhynchus asiaticus (Lath.).

This handsome Stork is moderately common and appears to be a resident. In November 1918 a pair were frequenting a big, flat nest on the extreme summit of a half-dead Shisham-tree at the edge of a small pool near Shah Jiwana Mandi. When examined the nest was empty, and possibly it was only being used as a resting-place.

Platalea leucorodia major Temm. & Schleg.

The status of this species is not very clear. In 1918 three individuals were seen at the canal escape at Asabha from 25 to 27 September. One of these was markedly larger and rosier than the others. I have a doubtful record for the

river on 30 November. In 1919 a flock was observed about the sand-banks of the river near Chund bridge from 11 May to 1 June; five were seen in the same place on 8 June, and single birds up till 14 June. Then in July and August a few birds were seen in the course of a tour of the riverain from Chund to Chiniot; and these were probably breeding, as one of a pair seen flying near Chiniot on 6 August was carrying a small branch. It is probably a summer visitor only.

Plegadis falcinellus falcinellus (L.).

A single Glossy Ibis was seen at the Nurpur Escape on 27 February, 1919.

Inocotis papillosus (Temm.).

The Black Ibis is resident and a not uncommon species in the district, although nowhere abundant. Although I never actually found any nests, I believe that it breeds in the riverain about July and August.

Ardea cinerea (L.).

The Heron is a common and generally distributed winter visitor from October until March. In 1919 odd birds were seen on 14 and 29 July and also on 19 August; these would be either early migrants or casual summer stragglers.

Ardea purpurea manillensis Meyen. (1 skin.)

The main strongholds of the Purple Heron are the huge reed-beds of the Nurpur Escape; here it is common in winter, and must, I think, breed there, as at a visit on 25 and 27 July, 1919, I saw several about, although a search for their nests was not successful. A few also occur in winter about the reedy channels of the Massan Ilaquah. The only other places in the district where I have met odd examples are Chund bridge (13 August, 1918, and 15 June, 1919) and the canal escape at Jaura (9 August, 1919).

Egretta alba (L.).

Observed in winter in small numbers from November to February. An Egret seen on the river on 25 May, 1919, was apparently of this species.

Egretta garzetta garzetta (L.). (1 skin.)

Not uncommon and probably resident. Eggs were secured from a colony breeding in company with *Ardeola grayii* at Chund bridge in July 1919.

[**Egretta intermedia intermedia** (Wagl.).

One or two Egrets seen both in summer and winter, appeared somewhat intermediate in size between the last two species and may have been of this kind.]

Bubulcus ibis coromandus (Bodd.).

Identified on 18 March and 23 September, 1918, and on 15 June, 1919, but probably more common than these records imply. White Egrets are seen occasionally throughout the year, and circumstances do not allow of the specific identification of the majority seen.

Ardeola grayii (Sykes).

A resident in small numbers, which are greatly increased by an immigration of birds arriving about May ; they breed in July and August, and depart probably in September.

[**Butorides javanicus** (Horsf.).

A small and dark Bittern seen at Asabha on 27 September, 1918, was probably an immature example of this species.]

Nycticorax nycticorax nycticorax (L.).

A few colonies of the Night Heron are to be found here and there in the district, as at Chund bridge, Mochiwala, Wer, and Jaura. It is a resident species.

Botaurus stellaris (L.).

A single Bittern was flushed on 7 and 8 December, 1919, from a small reed-bed at Massan.

Anser anser (L.).

Anser indicus (Lath.).

In November 1871 Hume passed down the Jhelum and Chenab rivers through Jhang District on his way to Sind (Stray Feathers, vol. i.). To anyone reading that account

one of the first points that will occur is the extreme abundance of Geese along this area, particularly of *Anser anser* (L.). Huge flocks were constantly seen, and specimens were obtained without difficulty. Now, in Jhang District, it is a very different story. The waters of the rivers, drained by the canals, have become but a mere shadow of their former selves in the winter months, and the numbers of Geese have greatly dwindled. A certain number still appear in winter, and frequent the sand-banks and feed in the neighbouring wheat-fields, but the flocks are small and few and far between. My notes show that they are with us from December to March, though these dates should probably be extended. Different dates for the two species are not satisfactorily indicated.

Casarca ferruginea (Pall.). (3 skins.)

A common winter visitor, usually found in pairs or small parties, but occasionally in flocks of as many as fifty individuals. It arrives in November (earliest dates 18 November, 1917; 12 November, 1918) and leaves about February, although I saw a pair on the Abdul Rahman jheel as late as 21 March, 1918.

Anas platyrhyncha platyrhyncha L. (1 skin.)

The Mallard is a winter visitor, and from November to January forms the vast majority of the Ducks in the district. They start to leave in February and are practically all gone by the middle of March.

Anas pœcilorhyncha pœcilorhyncha Forst. (5 skins.)

The Spot-bill Duck is nowhere very abundant, but parties of this species are to be met with among the other Ducks in the district during the winter months. I have only seen the species from November to March, but on occasion it certainly breeds in the district. On 20 December, 1917, when we were shooting the big Kharkan jheel, Capt. Ticehurst came across two Spot-bills which appeared absurdly tame, and on shooting one he found that it was a young bird of the year, unable to fly properly.

It is a confiding species, loath to leave its haunts, flying but a short way and lower than most Ducks, and continually circling round and endeavouring to return to the water it was disturbed from.

Anas crecca crecca L. (10 skins.)

The Teal shares with the Mallard the honour of being our most abundant Duck. It is one of the first to arrive, and I have seen it as early as 31 August, 1919. It remains common until the end of March and a few stay into April. My latest date for it is 7 April, 1919.

Anas querquedula L. (5 skins.)

The Garganey is only a spring and autumn passage migrant through the district, and is in consequence not found with the other Ducks on the jheels in winter. On the autumn migration I have only once met it, viz. a single Duck shot at Asabha Escape on 25 September, 1918. For the spring passage, when it is fairly common, my earliest and latest dates are 19 March, 1918, and 7 April, 1919.

Anas strepera L. (5 skins.)

The Gadwall is very abundant as a winter visitor from November until March. The latest date on which I have seen it is 21 March, 1918.

Anas penelope L. (4 skins.)

The Wigeon is a winter visitor in fair numbers, met with from December until March (latest date 19 March, 1918).

Anas acuta acuta L. (1 skin.)

A winter visitor in small numbers. My earliest and latest dates for the Pintail are 22 October, 1917, and 27 February, 1918. It is by far the shyest of the various Ducks and the first to desert a jheel that is being shot, so but few come into the bag.

Spatula clypeata (L.). (8 skins.)

The Shoveler is common as a winter visitor from November (earliest date 15 November, 1918) till the end of March. A few birds remain until April (latest date 10 April, 1919).

Netta rufina (Pall.). (2 skins.)

The Red-crested Pochard is by no means common, but several were met with in the month of December 1917 and 1918.

Nyroca ferina ferina (L.). (4 skins.)

Flocks of Pochard occur about the jheels from November till the end of March. A single bird was seen on the river on 7 April, 1919.

Nyroca nyroca nyroca (L.). (1 skin.)

A single White-eyed Duck was shot at Nurpur jheel on 19 December, 1918, by Capt. C. B. Ticehurst.

Nyroca fuligula (L.). (1 skin.)

Fair numbers of Tufted Duck appear on the jheels from November until about the middle of March. A pair was seen on the river Chenab on 7 April, 1919.

Mergus albellus L. (2 skins.)

Hume records (S. F. i. pp. 101, 265) that he saw a party of four Smews on the bank of the river Jhelum in Jhang District on 28 November, 1871, and secured a young male.

I have the following records:—

1917. 24 December. One shot near Pabbarwala.

1918. 19–20 December. A few at Nurpur jheel, including two adults Drakes, of which one was shot by Capt. C. B. Ticehurst.

1918. 25 December. A small party of seven or eight at Sang jheel.

1919. 19 January. Remains of a Duck brought in by my falconer, who said he had killed it with a Falcon at Chund bridge.

1919. 22–27 January. An adult Drake, reported by my falconers as about the Massan jheels.

Phalacrocorax carbo (L.).

The Cormorant does not breed in Jhang District. Occasionally flocks appear on the river from December to February, and I have seen a flock pass over the Civil lines on 8 October,

1918. A single Cormorant was circling over the Civil lines on the evening of 8 July, 1919.

Phalacrocorax javanicus (Horsf.).

In 1918 one was seen near Chund bridge on 24 May, and two more in the same locality on 13 August.

Anhinga melanogaster Penn.

One was seen at Nurpur Escape on 19 December, 1918.

Podiceps ruficollis capensis Salvad.

The Little Grebe is rather scarce in the district, and I have only observed it occasionally from December to March. It may, however, be resident at Nurpur Escape.

Columba livia neglecta Hume. (1 skin.)

An abundant and generally distributed resident. The single skin prepared, shot by Ticehurst from the Chund bridge, belongs to this race, to which he refers all other Punjab specimens examined.

Columba eversmanni Bp. (1 skin.)

Eversmann's Stock Dove was observed somewhat erratically in flocks in December, January, and March; large numbers were also seen coming to drink at Chund bridge on the evening of 1 April, 1919, in company with flocks of the last species; these were probably birds on passage, as no other evening flight was seen in that locality.

Streptopelia senegalensis cambayensis (Gm.). (2 skins.)

A common and generally distributed species and in the main resident, though there were some signs of its being partially migratory and more abundant in summer. On the Yakkuwala Hills it is the chief inhabitant.

Streptopelia decaocto decaocto (Friv.). (4 skins.)

Common, generally distributed, and resident, tending to collect together into flocks in winter.

Œnopopelia tranquebarica tranquebarica (Herm.).

With the exception of a single pair seen at Hassan Khan on 31 March, 1919, the Red Turtle-Dove was only noted as

a common summer visitor, arriving about the end of April (earliest dates 27 April, 1918 ; 26 April, 1919) and leaving early in August (latest dates 17 August, 1918 ; 13 August, 1919).

Pterocles orientalis (L.). (1 skin.)

While this fine Sand-Grouse is common in suitable localities throughout the winter, it was most noticeable in 1917 and 1918 as a passage migrant in November, when flock upon flock were to be seen in the early mornings passing in a southerly or south-easterly direction. The return passage was not so marked. The earliest dates on which I have observed the species are 29 October, 1917 ; 10 November, 1918 ; 10 December, 1919. It was last observed as follows :—14 March, 1918 ; 21 February, 1919 ; 13 February, 1920 (a single bird). It was comparatively very scarce during the winter of 1919–20.

Pterocles senegalensis erlangeri Neum. (1 skin.)
(= *P. exustus* auct.)

A common and generally distributed resident. On 4 April, 1919, I found a clutch of three eggs of this species at Kadirpur.

Burhinus œdicnemus astutus Hart. (2 skins.)

A somewhat scarce resident, observed only as follows :—

1917. 25 December. A party of three found on some waste plain at Pabbarwala ; they were easily taken by my Shahins.

1918. 23 December. A party of three in some bushes on the Skorkot plain.

1919. 25 May. A single egg taken on the sandy river-bed amongst tamarisk by the Rivaz bridge.

1919. 8 June. A single egg found in the same locality and probably laid by same pair.

The taking of these two eggs has been fully described in 'Bird Notes,' 1919.

Esacus recurvirostris (Cuvier).

The Great Sand-Plover is to be found breeding commonly

along the sands of both rivers from April to June. It is in the main a summer visitor only, but on 28 December, 1918, I met with a party of four on a ploughed field in the riverain by tamarisk scrub not far from a channel of the river; three of these were successfully taken by my Falcons.

Cursorius gallicus gallicus (Gm.). (4 skins.)

The Cream-coloured Courser was only met with in winter from November (earliest dates 13 November, 1917; 30 November, 1918) until February (latest dates 28 February, 1918; 26 February, 1919; and 18 February, 1920). It frequently consorts with the next species. On one occasion I flew a Shahin Falcon at a party of three Cream-coloured Coursers on a wide plain, against the advice of my falconer, who said that it was impossible to take these Plovers. He was right. As soon as the Falcon was on the wing the Coursers rose, and they escaped her with the greatest ease, outpacing her and rising to a great height in the air.

Cursorius coromandelicus (Gm.). (1 skin.)

In winter this Courser is generally distributed in small numbers throughout the riverain area, to which it is more restricted than *C. gallicus*. I suspect that it is a resident species, although my records do not bridge the gap between April and August, as the areas that it inhabits are difficult to visit in the hot weather, and on 3 and 4 August, 1919, at Chiniot I saw a party of four birds, of which two appeared to be immature.

Glareola lactea Temm. (1 skin.)

A summer visitor to the rivers, where it breeds in colonies from April to June. The earliest date on which I have met it is 24 March, 1918, and the latest date is 28 August, 1919, when a flock of twenty to thirty birds was hawking over my garden in the evening.

Charadrius alexandrinus alexandrinus L. (1 skin.)

Only observed in the winter of 1918–1919, when a few were noted about the Chenab River in November and December.

Charadrius dubius jerdoni (Legge). (4 skins.)

The Little Ringed Plover breeds on the sand-banks of the rivers in May and June and probably also earlier. It is a resident species, but out of the breeding-season leaves the river areas and spreads throughout the district, visiting any small pond or flooded field. During April, August, and September they are occasionally to be found in the most unexpected spots, from which it is probable that the species is also to some extent migratory; but all the specimens obtained in the district belong to the same race.

Vanellus vanellus (L.).

The Peewit is a common winter visitor, arriving in November (earliest dates 11 November, 1917; 14 November, 1918), and leaving about the beginning of February (latest dates 12 February, 1918; 3 February, 1919; 31 January, 1920). In the abnormally wet winter of 1917–1918 the species was still abundant during the first week of February.

Chettusia gregaria (Pall.). (8 skins.)

The Sociable Plover is a fairly abundant winter visitor, and is to be found in flocks which usually feed in the wheat-fields. The earliest dates on which I have seen it are 1 November, 1917, and 18 November, 1918, and it remains until well into February (latest dates 20 February, 1918; 24 February, 1919; 17 February, 1920). A belated straggler in breeding-plumage was shot by me on a sand-bank of the Chenab River (an unusual spot for this species), near Jhang, on 7 April, 1919.

Chettusia leucura (Licht.). (2 skins.)

A winter visitor in small numbers, and only met with on the Nurpur Escape and the Massan jheels. Observed on various dates between 13 December and 29 March.

Sarcogrammus indicus (Bodd.). (2 skins.)

A common resident, most numerous about the canal areas, but during the breeding-season its numbers are apparently increased by an immigration of summer visitors. Eggs were found on different dates between 28 April and 6 July.

Hydrophasianus chirurgus (Scop.). (1 skin.)

Several pairs, doubtless breeding, were seen at Nurpur Escape on 25 July, 1919. It was not otherwise met with in the district.

Erolia alpina alpina (L.). (1 skin.)

On 12 January, 1919, I shot a Dunlin from a small flock of Dunlins and Little Stints near Chund bridge, and on 7 April saw a small flock of Dunlins on the river.

(Two very large flocks of some small Wader, probably of this genus, were seen flying up the river on 18 May, 1919, but they were too far distant to allow of identification.)

Erolia minuta (Leisl.). (2 skins.)

Erolia temminckii (Leisl.) (2 skins.)

Stints occur throughout the winter in small numbers from November onwards until their numbers are greatly increased by a rush of passage migrants in the latter half of March and in April. My notes do not show the separate status of the two species very satisfactorily, owing to the difficulty of distinguishing them in the field, but so far as I could ascertain, both birds have much the same status and occur throughout the period mentioned.

Philomachus pugnax (L.). (2 skins.)

A not uncommon spring passage migrant in the latter part of March and beginning of April. A flock of Waders, seen as late as 18 May, 1919, was perhaps of this species. A single bird was seen at Massan on 13 December, 1918. One flock was seen feeding on irrigated plough-land.

Tringa hypoleucos L. (1 skin.)

The Common Sandpiper arrives normally in the district about the beginning of August, although I have seen single examples as early as 14 and 27 July, 1919. It remains in varying numbers throughout the winter ; the latest date on which it was seen was 1 May, 1918.

Tringa glareola L. (2 skins.)

The Wood-Sandpiper is an abundant passage migrant through the district, appearing from the end of March to the beginning of May in spring, and from the middle of July to the end of September in autumn. A few birds remain for the winter about the grassy jheels that suit their habits. During the migrations it is by far the most abundant Wader in the district.

Tringa ochropus L. (2 skins.)

The Green Sandpiper arrives in the district on the autumn migration about the middle of July and becomes fairly abundant in August. Many of these birds undoubtedly pass further on, but the species remains throughout the winter, plentiful in a wet season like that of 1917–1918 and scarce in a drought like that of 1918–1919. The return passage takes place about April, a few birds remaining on for the first few days of May. Occasional non-breeding birds are to be seen during the hot weather, as, for instance, when two were noticed on the river on 1 June. Small parties may be seen during the migrations, but for the most part the bird is solitary in its habits, and indifferent as to whether it feeds in some large, grassy jheel or on the sun-baked margin of a buffalo-wallow. It is not, however, very partial to the sand-banks of the rivers.

Tringa totanus eurhina Oberh. (5 skins.)

The Redshank is a common winter visitor to the district. In 1919 there were many about the flooded riverain near Chund bridge as early as 22 August, but these birds were probably passage migrants and passed on, as normally the species does not seem to be common until October. They leave early, as I have no satisfactory record of any being seen after February.

Tringa erythropus Pall. (5 skins.)

Large flocks of the Spotted Redshank, often mixed with ordinary Redshanks, occur about the river sand-banks in February and March, and smaller parties and individuals

may be met with at any time during the winter at any suitable jheel or pond from October to March. One was seen as late as 30 April in 1918, and five or six as early as 25 September in the same year.

Tringa nebularia (Gunner.).

The Greenshank is a common winter visitor to the district, and may be found whenever looked for from the beginning of October to the end of February. In March it becomes less common, but occasional birds may still be seen in April. It is never entirely absent, as I have notes of single birds seen on 4, 7, and 28 April and 15 May, 1918, and on 18 and 25 May, 1 June, and 14 July, 1919; but these records probably refer to non-breeding stragglers rather than to early or late migrants.

The autumn migration begins early in August and continues throughout September.

Tringa stagnatilis (Bechst.). (4 skins.)

The Marsh-Sandpiper was observed in small numbers during the spring and autumn migrations of 1919; that is to say, several were seen about the Massan jheels daily from 26 to 29 March, and a few were seen in the flooded riverain near Chund bridge on 22 August. Several were also noticed about the Massan jheels in December, both in 1917 and 1918. Its actual status requires further elucidation.

Himantopus himantopus himantopus (L.). (3 skins.)

The Stilt appears as a not uncommon passage migrant in the first half of April and again in the second half of August and in September. Occasional birds are to be seen during the winter months. It is curious to note that both the specimens preserved—obtained on different dates—were only winged at my first shot, and yet both immediately continued feeding without any appearance of alarm.

Limosa limosa (L.).

Single birds were seen in 1918 on 21 March at Pir Abdul Rahman jheel, and on 30 November near Chund bridge.

Numenius arquata lineatus Cuv. (2 skins.)

A winter visitor to the riverain area from October (earliest date 13 October, 1918) until April (latest date 7 April, 1919).

Gallinago gallinago gallinago (L.). (3 skins.)

The earliest date on which I have seen the Snipe in the district is 14 September, 1918, and the latest 6 April, 1919. Between those dates a few may be met with at any time in those localities, few and far between, which are suitable to the requirements of the species. About February and March their numbers increase, doubtless owing to the arrival from farther south of early migrants. Five to ten couple of Snipe would be a good bag for this district.

Limnocryptes gallinula (L.). (2 skins.)

Earliest and latest dates for the Jack Snipe were 18 October, 1918, and 28 March, 1919. It is not as abundant as the last species, but may be met with throughout the winter. As in the case of the Common Snipe, there are signs of an immigration about February and March.

Hydrochelidon leucopareia indica (Steph.).

In view of my observations at Jhelum (Ibis, 1901, p. 108) of the numbers of Whiskered Terns which pass along the Jhelum River from April until the first week in July, going to their breeding-ground in Kashmir, it is certain that this stream of birds must pass along the Jhelum River and the lower part of the Chenab River in Jhang District. In both years, however, I was unable to visit that area at the right time. No such migration was observed up the course of the Chenab River above its junction with the Jhelum, but a single Tern of this species was observed at the Chund bridge on 6 October, 1918.

Gelochelidon nilotica nilotica (Gm.). (2 skins.)

The Gull-billed Tern breeds on the Chenab River within Jhang District, as was to be expected from the fact that the river Chenab at Wazirabad was the first recorded locality for its eggs in India (*cf.* Hume, N. & E., 2nd ed. iii. p. 304).

I did not, however, find the eggs until 1919, when from April to July several birds were frequenting the neighbourhood of the Rivaz bridge. It was clear that four or five pairs were settled on a small sand-bank just above the bridge, which was the breeding-place of *S. seena*, *S. albifrons*, *Rynchops albicollis*, and *Glareola lactea*, but for a long time I could not find any trace of eggs or young. On 1 June, however, I found a nest with one egg, and this nest, when visited again on 8 June, contained two eggs, which I took. These eggs measure 45 × 33 and 42 × 32 mm. The nest was a mere hollow, scraped in dry sand under the lee of a small pad-like plant which was growing on a hummock of sand in the middle of the sand-bank. I could find no more nests, unless a single unidentified egg belonged to this species : yet the various pairs of Gull-billed Terns were noisy and fearless, flying low over my head or sitting on the ground. They did not seem to have laid yet. I cannot help thinking, in view of the earlier dates of other Punjab nesting records, that this colony must have started to breed earlier in the season, but had lost its eggs through the washing-away of a sand-bank.

During the winter months this Tern is of a wandering disposition, although apparently not migratory in the strict sense, and may then be found along the canals or at any jheel or pond. The call is a sort of "Kik-kik-kik" in rather the tone of the Punch-and-Judy man.

Sterna albifrons albifrons Pall. (3 skins.)

The Little Tern is a summer visitor only to the district, where it breeds on the sand-banks of the Chenab (and doubtless of the Jhelum too). The earliest dates on which I have seen it are 4 April, 1918, and 7 April, 1919. Several clutches of eggs were taken between 18 May and 8 June from the same sand-bank as the eggs of *G. nilotica*. Here I found these little birds very pugnacious, chasing the other Terns, but at the same time very shy, flying round at some height and distance, so that it was with the greatest difficulty that I secured specimens. The call is a shrill sort of squeal,

easily distinguishable from the calls of the various other species which breed in the same area.

Twelve eggs taken yield the following measurements :— Length 29·5 to 32·5 mm., breadth 22 to 24 mm. ; average measurement 30·8 × 23 mm.

Sterna melanogaster Temm. (1 skin.)

The Black-bellied Tern breeds fairly commonly on the river sand-banks from March until May : it nests both in company with the colonies of other Terns and also solitarily. It is a resident species and, like the other Terns, wanders a good deal out of the breeding-season. Birds in the white-bellied stage of plumage were only observed in September.

Sterna seena Sykes.

Breeds commonly on the river sand-banks about May and June, and is a resident species, wandering out of the breeding-season along the canals and to any patch of water. This Tern may often be seen travelling high in the air overland.

Rynchops albicollis Swains.

The Scissorbill breeds on the river sand-banks from April to June, in company with the colonies of Terns. It is apparently a summer visitor only, as I have not seen it before 24 March or later than 6 October, 1919.

Houbara undulata macqueeni (Gray & Hardw.). (1 skin.)

The Houbara Bustard is a common winter visitor to the district, which is in parts peculiarly adapted to its habits. It frequents three types of ground. Firstly, portions of the riverain area, as about Ahmedpur, where patches of cultivation, both wheat and pulses, alternate with stretches of sand and thickets of tamarisk scrub. Secondly, it is to be found in the "Budh" or ancient river-courses which crop up here and there in the district, as at Mochiwala ; these are sandy areas, used for grazing camels, studded fairly thickly with stunted Jal-trees and thorny bushes, and usually surrounded by cultivation. Thirdly, and most commonly, it is to be found in the wide semi-desert plains, as those of Shorkot

and Khiwa, which stretch for miles—a waste of hard, sandy soil sparsely covered with small desert plants and wild Caper bushes, with here and there a tiny hamlet. In such plains patches of sand-dunes occur, and in their shelter a sunken field or two is cultivated. The neighbourhood of these little oases is generally a sure find for Houbara, rather than the general expanse of the plain. The main requirements of the bird are two—an area of barren ground, only disturbed by wandering herds, on which to spend the day, and cultivation in which to feed by night. The three types of ground described above, each in their own way fulfil these requirements. Unfortunately, the habit of visiting cultivation renders it fairly easy to capture Houbara, which are snared in nooses set round some waste-girt field. Birds caught in this way have been brought to me alive and uninjured.

The Houbara is seldom found solitary: a suitable area is usually frequented by several birds, perhaps a dozen in number, which, while they can scarcely be described as forming a flock, certainly keep loosely in touch with each other.

As is well known, the Houbara forms the finest quarry for the Peregrines and Sakers of the Falconer; but although I had some good sport in Jhang District with these birds, it did not compare with that formerly enjoyed about Hissar in the south-east Punjab. For at Jhang the quarry was by no means so abundant, and the areas of their occurrence not so easily accessible, the result being that the primary requisite for success in this difficult branch of falconry, viz. frequent and regular flights, was not fulfilled. The native falconers of the district seldom hawk the Houbara with success, their knowledge of any but short-winged Hawks being small.

The earliest date on which I have seen the Houbara in the district is 6 October, 1918; it is most abundant from November to the end of January. A fair number remain into February, and the latest date on which I have met the species personally is 24 February, 1919; according to native testimony a few birds are to be met with until the middle of March.

Anthropoides virgo (L.).

During the spring of 1918 I was for the first time privileged to see the famous migration of the Cranes.

It is perhaps most easily described by extracts from my diary :—

8 March. Two long lines of Cranes flying northward over the Police lines.

23 March. Gahr Maharaja : about 200 Cranes seen flying in a north-easterly direction up the river in the evening at an enormous height ; they were in an immense tangled skein, exhibiting every formation; occasionally one or two birds were calling.

24 March. About 10 A.M. some 500 Cranes were seen to rise from a distant sand-bank on the river : the majority rose into the air and circled in an immense cloud at a great height until they finally disappeared from view. The remainder did the same in smaller, disconnected groups.

27 March. Shorkot. A large flock flew over in a north-westerly direction.

31 March. Jhang-Maghiana. About 2 P.M. a flock of about 100 Cranes passed over my house, "swirling" in the air and gradually moving in a northerly direction. Occasionally a bird would call.

1 April. About 2 P.M. some 200 Cranes were "swirling" high over Maghiana, and then started off in a north-westerly direction in small parties and groups of chevrons. Then about 3 P.M. I heard more Cranes calling, and went out to see a stream of Cranes at an immense height following the same line as the previous flock. They were big flocks, small parties, chevrons, and odd birds extending in one line of flight as far as the eye could reach. As I watched, the leading flock commenced "swirling" until some of the following parties joined it, and then they started off again, following the original route. About 4.30 P.M. I again heard Cranes calling, and in the evening I saw a couple of flocks flying in the same line but rather lower. The servants reported that after dark they could hear Cranes calling.

2 April. Again about 2.30 P.M. a large number of Cranes were seen circling over until joined by following parties, when all started off in the same direction. They were very noisy and flying fast at a great height.

3, 4, 5 April. Small parties were seen at different times following the same line but flying rather lower.

7 April. Two flocks seen in the evening following the same route, but flying more in a skein of long lines.

Next spring I was naturally on the look-out for a similar migration, but was disappointed; only a few flocks were seen flying north-east on 27 and 29 March and 1 April.

It is probable that their route for some reason had shifted farther west, for Mr. A. A. Phillips, I.S.R., wrote to me from Kundian (Mianwali District) on 27 March, 1919, as follows:—

"Just a line to give you a note *re* the Cranes on migration here at present. I have noticed a number about lately, but did not really observe them until the 23rd of March. That day we had a strong south wind. Flock after flock came flying low from the desert here, where they had apparently been feeding on the gram. On reaching the neighbourhood of my bungalow they started rising, and wheeled right over the bungalow to 1000 ft. or so elevation and then headed off due north. This went on all the morning. Since then we have had north winds, and I have not seen any migrating. I think those I saw on the 23rd March were mostly Common Cranes. Since then I have seen a good number from my bungalow out in the desert, and on the 25th of March C. and I went out after them. They were a sight worth seeing and hearing. There seemed to be vast divisions of them about, but we only shikared one division: while they were feeding on the ground there was a broad band of them for about 1½ miles. When alarmed they bunched together and looked just like a white pebble beach about 100 by 500 yds. in extent, and when they rose the noise was just like the roaring of the sea. We shot three, which were all Demoiselles. The vast majority of those we saw were Demoiselles, but I saw a few Common Cranes also. I have not been out again since, but I have not

seen many about; either they have shifted their feeding-grounds or migrated."

The return migration of birds flying along the same line but in a reverse direction was noticed in September of both 1918 and 1919; the numbers seen, however, were nothing like so large as on the spring migration described above.

It is a matter of great regret to me that I was quite unable satisfactorily to identify the species of Cranes seen thus migrating, but they were, I think, of this species.

The Demoiselle Crane is, at any rate, met with in fair numbers throughout the winter, and is generally distributed.

Megalornis grus grus (L.).

Observed in fair numbers as a winter visitor from October until February. They appear, however, to be less numerous than when Hume made his trip down the Jhelum and Chenab rivers.

Porzana porzana (L.). (1 skin.)

I shot a male Spotted Crake from a marshy patch of rush-grass at the end of a channel in the neighbourhood of Massan on 8 February, 1918. Another Crake flushed from the reeds of another channel on the same ground on 7 December, 1919, was also apparently of this species.

Porphyrio poliocephala poliocephala (Lath.). (2 skins.)

A few Purple Coots were observed in 1918 only, as follows:—

8 February. One was flushed from some reeds in a channel at Massan where I was hawking Duck, and was promptly killed by the Peregrine which was waiting on above me for more legitimate quarry.

20 November. Two seen at Nurpur jheel.

30 November. One was found sitting in a Shisham-tree by the Chund bridge, and being driven out with difficulty, was taken by one of my trained Shahins, which it fought desperately.

14 December. One seen by Ticehurst at Massan.

19 December. One seen at Nurpur jheel.

Gallinula chloropus chloropus (L.). (1 skin.)

The Water-Hen occurs in fair numbers on the larger jheels and ponds, such as Pir Abdul Rahman, Nurpur, and Pabbarwala, where I have seen it in December, January, and March. It must, I think, be only a winter visitor, as Pir Abdul Rahman jheel usually dries up in the summer months, and I could find no Water-Hens at Nurpur in the month of July. One was brought to me alive on 8 May, 1918, which had been caught in the District Board garden at Jhang. This was clearly a migrating bird, as no suitable pond for the species is to be found for miles around.

Fulica atra L.

The Coot is common on the Nurpur Escape jheels in winter, where I have seen it in December, January, and February. None were to be seen there on my visiting the place in July, so I presume that it is a winter visitor only. Two were seen at Massan on 21 November, 1917, and a few at Pabbarwala jheel on 24–25 December of the same year; but none were afterwards seen in these localities.

Francolinus francolinus asiæ Bp. (7 skins.)

The Black Partridge is a resident, and is found in fair numbers, though nowhere particularly abundant, throughout the riverain area. It does not occur in the other parts of the district.

Francolinus pondicerianus interpositus. (2 skins.)

A resident, and generally distributed throughout the district, in some places being fairly numerous.

Coturnix coturnix coturnix (L.).

The status of the Quail in this district appears to be very variable. During the winter of 1917–1918 it was found in fair numbers from the beginning of November until the end of March. One was seen on 7 May. Some appeared in September 1918, doubtless on passage; but after that I did not meet with it until February and March 1919, when there were again a few about on the return passage. Two or three

were next seen in September 1919, but no more were met with that winter until 9 March, 1920, when I saw a single one being chased by a Lugger Falcon.

Some Quail must undoubtedly breed in the district, as I received a clutch of four stale but unincubated eggs in May 1919 from some Sansis at Shorkot, who had been told to search for eggs of Sand-Grouse. In the neighbouring district of Lyallpur, Major Lindsay Smith records the Quail as breeding freely in April and May (Journal Bombay N. H. S. xxii. p. 200).

XXIV.—*Additional Notes on the Japanese species of* Oceanodroma. By Nagamichi Kuroda, Rigakushi, F.M.B.O.U.

Viscount Y. Matsudaira, M.O.S.J., has recently sent me some examples of the Japanese Petrels of the genus *Oceanodroma* for identification. One of them is an apparently new addition to the Japanese avifauna.

I express my sincere thanks for the kindness of Viscount Matsudaira.

Oceanodroma leucorrhoa leucorrhoa (Vieillot).

Procellaria leucorhoa Vieill. Nouv. Dict. d'Hist. Nat. xxv. 1817, p. 422 : Maritime parts of Picardy, France.

Leach's Petrel is found in the north Atlantic and north Pacific Oceans. It was recorded from the Kuril Islands as a breeding bird * and has been obtained off the Japanese islands of Yezo or Hokkaido †. It has also been recorded in the Pacific Ocean off the coast of Japan as a migrant ‡.

Dr. Oberholser ‡ mentioned that the examples from the

* Blakiston and Pryer, Ibis, 1878, p. 212; Oberholser, Proc. U.S. Nat. Mus. vol. lvii. 1917, p. 166; Hartert, Vög. pal. Faun. ii. 1920, p. 1414.

† Godman, Monogr. Petrels, vol. i. 1907–1910, p. 9; Hartert, *l. c.* p. 1414.

‡ Kittlitz, Denkwürd. Reise Russ. Amer. Mikrones. und Kamts. vol. ii. 1858, p. 191; Oberholser, *l. c.* p. 166.

northern Pacific Ocean, including the Commander and Kuril Islands, appear to be slightly darker than those from the north Atlantic Ocean, but this is probably due to the age of the specimens rather than to any subspecific difference.

I have examined only one specimen, which was obtained in one of the Kuril Islands, May 1918.

Measurements of the specimen :—

	Loc.	Exposed culmen.	Wing.	Tail.	Tarsus.	Mid. toe and claw.	Depth of tail-fork.
Matsudaira's Coll. No. 14325.	Kuril Is.	16 mm.	160	74·5 (lateral); 59 (central)	26	26	17

Oceanodroma castro (Harcourt).

Thalassidroma castro Harcourt, Sketch of Madeira, 1851, p. 123 : Madeira.

The Madeiran Fork-tailed Petrel, often called the Hawaiian Petrel, has a very wide range, extending from the Atlantic to the Pacific. It is recorded from the Atlantic Ocean as a breeding bird *, and was obtained on Kauai Island, Hawaiian group, and described by Ridgway † under the name of *Cymochorea cryptoleucura* ; it is not yet recorded from Japan.

Viscount Matsudaira, however, obtained an adult specimen of the species, which was captured in the River Daiyagawa, Nikko, Prov. Shimotsuke, C. Hondo, Japan, in November 1906. This specimen agrees well with the description and plate of Godman's 'Monograph of the Petrels' (vol. i. p. 15, pl. 5). It is a blacker and smaller bird than the preceding species, *leucorrhoa*, and has distinct, broad, black tips to the white upper tail-coverts. The outer tail-feathers have a white patch to their bases. The depth of tail-fork is only 7 mm. instead of 17 mm. It is no doubt a straggler from sea-coast to the mountainous river where it was captured, and is the only record of the species obtained in Japan.

* Godman, *l. c.* i. p. 16 ; Hartert, *l. c.* ii. p. 1415.

† Ridgway, Proc. U.S. Nat. Mus. iv. 1882, p. 337.

Measurements of the Japanese specimen are as follows :—

	Loc.	Exposed culmen.	Wing.	Tail.	Tarsus.	Mid. toe and claw.	Depth of tail-fork.
Matsudaira's Coll. No. 812.	Nikko, Japan.	15 mm.	147	66·5 (lateral) 61 (central)	21	22	7

Oceanodroma monorhis monorhis (Swinhoe).

Thalassidroma monorhis Swinh. Ibis, 1867, p. 386 ; 1869, p. 348 : Amoy, China.

Swinhoe's Fork-tailed Petrel is only known from near Vladivostock, Japan (Prov. Mutsu, N. Hondo, Loo-Choo Is.), and coast of China (Amoy). Swinhoe says that it had been found breeding in the Liu-Kiu Islands *, but Dr. Hartert writes as follows :—" Die Angabe vom Nisten auf den Riu-Kiu-Inseln ist zweifelhaft " †.

I have examined only two specimens of the form from Japan. One of these is preserved in the Science College Museum, Tokyo ; it was obtained in the Prov. Mutsu, N. Hondo, and has already been mentioned by Dr. Stejneger ‡. Another one is in the possession of Viscount Matsudaira, and was obtained in Prov. Yamato, S. Hondo, date unknown. This is a new locality for the form in Japan.

The latter specimen measured by me is as follows :—

	Loc.	Exposed culmen.	Wing.	Tail.	Tarsus.	Mid. toe and claw.	Depth of tail-fork.
Matsudaira's Coll. No. 4596.	Yamato, Hondo.	14·5 mm.	141	63·5 (lateral) 56·5 (central)	24	22·5	8

The length of wing and tail of this specimen somewhat

* Swinhoe, P. Z. S. 1871, p. 422.

† Hartert, Vög. pal. Faun. ii. p. 1416.

‡ Stejneger, Proc. U.S. Nat. Mus. xvi. p. 622.

shorter than the measurements given by Godman * and Hartert †.

Oceanodroma furcata (Gmelin).

Procellaria furcata Gm. Syst. Nat. i. pt. 2. 1789, p. 561: "Habitat in glacie maris, Americam et Asiam interfluentis."

The Grey Fork-tailed Petrel is found in the northern Pacific Ocean south to California. It breeds on Copper Island, in Behring Sea, Aleutian Islands, etc., and probably on the Kurils ‡. In Japan, it has been obtained in summer near Kobe, S. Hondo §, and in spring near the mouth of the Abe River, Prov. Suruga ‖. A specimen was obtained in Sagami Bay and reported by the late Mr. Ogawa ¶.

I have an adult specimen which measures as follows :—

	Loc.	Exposed culmen.	Wing.	Tail.	Tarsus.	Mid. toe and claw.	Depth of tail-fork.
Kuroda's Coll. No. 546.	Suruga Bay.	15·5 mm.	161	90 (lateral) 64·5 (central)	25	27·5	23

XXV.—*On the Representatives of* Corythornis leucogaster (*Fraser*) *in the Cameroon and the Congo.* By James P. Chapin, American Museum of Natural History.

(Plate V.)

When Professor Oscar Neumann ** called attention to the differences of colour and dimensions that distinguish his Upper Guinea race, *Alcedo leucogaster bowdleri*, from the typical form of Fernando Po, he remarked also that the

* Godman, Monogr. Petrels, i. p. 35.

† Hartert, *l. c.* p. 1416.

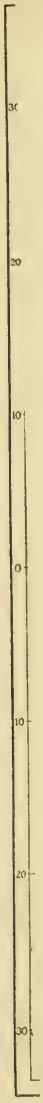
‡ Blakiston and Pryer, Ibis, 1878, p. 218; Stejneger, *l. c.* xxi. p. 278; Hartert, *l. c.* p. 1417.

§ Hartert, *l. c.* p. 1417.

‖ Ogawa, "Dobutsugaku Zasshi," xviii. 1906, p. 159.

¶ Ogawa, Annot. Zool. Japon. 1908, p. 339.

** Bull. Brit. Orn. Cl. xxiii. 1908, p. 14.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Map of Africa to show the distribution of the KINGFISHERS of the *CORYTHORNIS LEUCOGASTER* group.
Circles indicate the type localities.

subspecies found in southern Cameroon and Gaboon is smaller than the typical island-form. But he made a mistake in adding the Congo to its range, and in applying the name *Ispidina leopoldi* Dubois to the Cameroon bird. The coloured plate accompanying Dubois's original description * shows clearly that this little Kingfisher from the central Congo has a deep blue superciliary or temporal line, instead of a rufous one glossed with lilac. As I shall show, *leopoldi* is a distinct species—or at least an unusually well-marked subspecies—and the Cameroon bird is still without a subspecific name.

Although it seems scarcely necessary to refer the Kingfishers of this small group to *Alcedo*, they certainly do not belong to *Ispidina*, if we accept the generic characters as usually stated, for the bill is here plainly higher than broad at the nostril. So they are best placed in *Corythornis*. Mr. W. de W. Miller has already shown † that a subfamily distinction cannot rightly be drawn, as in Sharpe's 'Hand-list,' between *Corythornis* and *Ispidina*. Even their generic demarcation is not very trenchant.

Neumann's statement as to the larger size of *Corythornis leucogaster* from Fernando Po is borne out by my examination of the material in the British Museum, as well as at Tring, Tervueren, Berlin, and Pittsburg. To be sure, only three specimens from Fernando Po could be found, but as compared with twenty-five specimens from the neighbouring part of the continent they show markedly greater dimensions. Indeed, the two adults from the island—in length of bill, its height at nostril, and in length of wing—exceed every member of the series of twenty-two mainland adults. The greater thickness of the bill, especially, is very noticeable in the island-birds, even though it may seem less striking when expressed in tenths of millimetres. But this difference has an exact parallel in the larger bills of *Corythornis nais* (=*galerita*) and *C. thomensis*, island-forms of the Gulf of Guinea, as compared with the continental *C. cristata* ‡.

* Annales Mus. Congo, Zoologie, (4) i. fasc. 1, 1905, p. 10, pl. vi. fig. 1.

† Bull. Amer. Mus. Nat. Hist. xxxi. 1912, p. 242.

‡ I follow Claude Grant, Ibis, 1915, p. 263, in the use of Vroeg's name for the Malachite-crested Kingfisher.

The two adult specimens of *C. l. leucogaster* that I examined are the type, without sex, from "Fernando Po," in the British Museum, and one labelled ♀, collected by A. Schultze at San Carlos, Fernando Po, in the Berlin Museum. In the British Museum there is another example, plainly immature, labelled ♂, from Fish Town, Fernando Po, taken by Seimund. In length of wing (60 mm.) and height of bill (7·6) * it exceeds any mainland bird, but in length of culmen (28), as might be expected, it is surpassed by many of them.

The comparative measurements in millimetres of adults may be summarized as follows :—

	Wing.	Exposed culmen.	Height of bill at nostril.
C. l. leucogaster.			
2 adults *	59, 63	32, 34·5	7·7, 8·2
C. l. batesi.			
13 adult males...	53–58 (56·1) †	27·5–31·2 (30·1)	6·4–7·1 (6·7)
7 „ females.	54·5–59·5 (57·0)	26·5–30·0 (28·7)	6·4–7·0 (6·7)

* The smaller of these two is the type.
† Averages in parenthesis.

On this basis I need not hesitate to name the mainland form.

Corythornis leucogaster batesi subsp. nov.

Subspecific characters.—Similar to *C. l. leucogaster* (Fraser) of Fernando Po in pattern and coloration, but smaller, with a slenderer bill.

Type.—♂ adult, Bitye, southern Cameroon. Oct. 3, 1913 (*G. L. Bates*), now No. 156061, American Museum Nat. Hist. Measurements: wing 55; tail 23; exposed culmen 30·5; height of bill at nostril 6·6.

Specimens examined.—Cameroon: Bimbia, 1 ♂; 25 miles from Kribi, 1 ♂; Nkonangi, 1 ♀; Efulen, 3 ♂, 3 ♀, 1 ♀ ?; River Ja, 4 ♂ ad., 1 ♂ imm.; Sakbayeme, 1 ♀, Lolodorf, 2 ♂, 2 ♀, 1 without sex.

* At the British Museum bills were measured with sliding calipers provided with a vernier. In other cases fine-pointed dividers were used, and a rule divided in half-millimetres.

Gaboon: Lake Erzanga, 1 ♂; "Gaboon," 2 without sex. Enclave of Cabinda: Landana, 1 ♂.

This race is named in honour of Mr. G. L. Bates, by whom were collected eleven of the twenty-five specimens I have examined.

The Second known Specimen of Leopold's Kingfisher.

A female example taken near Avakubi, Ituri District, by the American Museum Congo Expedition, was identified as an adult of *Ispidina leopoldi* Dubois, of which the type-specimen from the region of Lake Leopold II. was certainly immature. The light tip of the bill, as shown in the coloured plate, would alone be an indication of this in any of the related species.

Last December I had an opportunity of comparing our specimen with Dubois' type in the Congo Museum, at Tervueren, and of noting the agreement in pattern and, indeed, everything not plainly dependent on the immature condition of the type. The lighter blue back of the latter and its paler rufous flanks are accounted for by this difference in age. It is worthy of mention that the older bird, although the tip of its bill is worn as though from digging its nest (for the ovary was slightly enlarged), has the bill largely brownish and not light red as in adults of *Ispidina picta* or *Corythornis cristata*.

In the case of an adult male of *C. l. batesi* from Lake Erzanga, Gaboon, in Lord Rothschild's museum, Ansorge described the bill as "reddish black" on the upper mandible, "burnt sienna" on the lower; and so the Gaboon bird perhaps approaches that of the Upper Congo in this respect. This same example has possibly a slightly narrower, rufous, superciliary line than Cameroon specimens, yet it is still very unlike *C. leopoldi*.

Unless intergradation proves to take place in the region of the Sanga River, *Corythornis leopoldi* may be regarded as a distinct species, differing from *C. leucogaster* in its dark blue superciliary line, as shown in Dubois's plate, also in the

narrower, lighter, and more greenish-blue bars on the crown-feathers, which form a slight crest. The blue tips of its wing-coverts are darker, and much less noticeable; the same is true of the scapulars. They are nearly black.

From *Corythornis cristata* it differs widely in the colours of its lower parts, as it does also from *C. nais*, with which I have carefully compared it. These last two forms have both much longer crests and blue lateral margins on the crest-feathers; yet a few crown-feathers of *C. leopoldi* show blue edgings as well, the blue of the cross-bars being intermediate in shade between the deep blue of *nais* and the "malachite" in *cristata*.

A full description of the adult female of *C. leopoldi* follows:—

Feathers of crown elongated, but none more than 14 mm. in length; their colour black, with a narrow subterminal bar of light cerulean blue *, some of the longest feathers also bordered laterally with cendre-blue, the bars becoming on the nape deeper blue, more like the back. Forehead black, barred with blue, a band of Hay's blue passing over the eye, and broadening as it goes back to the nape. The usual elongate spot behind the ear-region white. Loral region rufous, spotted just in front of eye with black; cheeks, ear-coverts, sides of breast, and flanks rich vinaceous-rufous; chin, throat, middle of lower breast and abdomen pure white, upper breast washed with rufous. Middle of back, rump, and upper tail-coverts glossy blue-violet; scapulars and wing-coverts black, washed or margined with azurite-blue. Remiges black, bordered internally with apricot-buff, outermost primary with a narrow external margin of rufous basally. Under wing- and tail-coverts ferruginous, feathering of tibiæ largely blackish. Rectrices black, all but the outermost bordered with deep blue; tail slightly rounded, outer pair of feathers 3 mm. shorter than the middle.

Bill red at tip, shading basally to dusky brown; feet scarlet.

Measurements: length (skin) 110 mm.; wing 54; tail 23;

* Ridgway, 'Color Standards and Color Nomenclature,' 1912.

bill (exposed culmen) 27 ; depth of bill at nostril 6·8 ; width at same point 5·6 ; metatarsus 8. For the type-specimen Dubois gave : wing 50 mm. ; culmen 23 ; tarsus 8.

The known distribution of *Corythornis leopoldi* now includes the region of Lake Leopold II. and the Ituri forest at Avakubi, where this single specimen (all we ever saw) was found along a small forest-brook. It may be of interest to note that in this region of dense forest—unbroken save for the clearings of mankind—*Corythornis cristata* is extremely rare, even along the banks of a large river like the Ituri.

XXVI.—*On the Birds of the Province of Hupeh in Central China.* By J. D. La Touche, C.M.Z.S., M.B.O.U.

The following notes are based on a small collection of birds made from August 1918 to May 1919, almost entirely in the Chang-yang Hsien, a district of the province of Hupeh on the south bank of the Yangtse, south-east of Ichang, and not far from the Hunan border. The Chang-yang district is within the region explored by the late Mr. Walter R. Zappey, the very able collector who accompanied Mr. E. H. Wilson in his journeys throughout Hupeh and Szechuen, and who made in those provinces for Mr. John Thayer, the magnificent collections of vertebrates now deposited in the Museum of Comparative Zoölogy at Harvard College, Cambridge, Mass. Zappey obtained in Chang-yang Hsien forty species of birds. Amongst these were :—*Dryobates pernyi*, *Babax lanceolatus*, *Trochalopterum ellioti*, *Yuhina diademata*, and *Pyrrhula erythaca altera*, none of which was obtained by my hunter. The country in that part of Hupeh is mountainous, the elevation reaching, as I was informed by Mr. Wilson, to at least 6000 feet.

The country about Shasi, where I was stationed from November 1917 to May 1919, is perfectly flat, and consists of a cultivated plain, much broken by swamps, creeks, and lakes. I did practically no collecting at Shasi, and the few

notes regarding this locality were taken in gardens and in the close vicinity of the town.

The mountainous parts of Hupeh were first explored by Mr. F. W. Styan, who published notes on his collections in 'The Ibis' (1899, p. 289). In 1907 and 1908, Mr. Zappey collected, as mentioned above, in Hupeh and Szechuen. An account of his collections was published in the Memoirs of the Museum of Comparative Zoölogy, at Harvard (Mem. Mus. Comp. Zoölogy, vol. xl. no. 4, August 1912). The paper on the birds, by Messrs. Thayer and Bangs, will form the basis of any future work on central Chinese Ornithology, as it contains notes on 257 species and subspecies, collected or observed in Hupeh, out of the total of 358 mentioned in Messrs. Thayer and Bangs' work. In this paper the authors figure a Flycatcher, *Niltava lychnis*, which had been made known from Fohkien some years before as *N. davidi*.

I am greatly indebted to Fathers Thomas Kempenaers, Thaddée Jacobs, and Columban Clément, and to the late Father Anselme de Hemptinne, all of the Belgian Franciscan Mission of north-west Hupeh, for information regarding the country, for procuring a native hunter and assisting him to collect for me, and for a series of Pheasants. My best thanks are also due to Messrs. Chubb and Wells of the Natural History Museum and to Dr. E. Hartert of Tring for their kind assistance in identifying specimens for me, and to Lord Rothschild for kindly allowing me to work in his Museum.

On my way back to China in April 1920, I visited the Museum at Harvard College and enjoyed the hospitality of Mr. Outram Bangs, who very kindly gave me two days of his time. I was thus enabled to inspect most of the Chinese birds collected by Zappey, as well as the fine Yunnan collection acquired by that Museum in 1912.

In the following list, the birds previously unrecorded from Hupeh are marked with an asterisk.

1. **Corvus macrorhynchus.**

Thayer & Bangs, Mem. Mus. Comp. Zoöl. Harvard Coll. vol. v. no. 4, p. 197.

A common resident at Shasi. A young bird in moult and an adult, dated 30 October, 1918, from Chang-yan Hsien.

2. **Corvus torquatus** Less.
T. & B. p 197.
A common resident at Shasi. Builds in February.

3. **Corvus frugilegus pastinator** Gould.
T. & B. p. 197.
In winter at Shasi.

4. **Pica pica sericea** Gould.
T. & B. p. 199.
A common resident. A young bird from the hills has no white on the rump.

5. **Urocissa erythrorhyncha** (Gm.).
T. & B. p. 199.
Adult and young from Chang-yang Hsien. A family of full-grown young seen at Ichang on the 27th of May.

6. **Cyanopica cyana interposita** Hart.
Cyanopica cyana swinhoei T. & B. p. 199.
Two specimens obtained at Itu on the 21st and 24th February are similar to those from north-east Chihli, and differ, as stated by Dr. Hartert, from Lower Yangtse birds. Azure-winged Magpies are common at Shasi, but no specimens were secured, so that I cannot say whether the birds which occur there belong to the Lower Yangtse or to the Northern race.

7. **Garrulus glandarius sinensis** Gould.
T. & B. p. 191.
One young bird in first plumage and two adults from Chang-yang Hsien. The latter are similar to average birds from Fohkien with merely streaked forehead. Mr. Bangs showed me the series obtained by Zappey. Among these there is one specimen which is distinctly striped on the crown. Two others have this part faintly marked. These specimens are mentioned in Thayer and Bangs' work.

8. **Parus major artatus** Thayer & Bangs.

Parus major artatus T. & B. Bull. M. C. Z. May, 1909, p. 140; M. M. C. Z., August 1912, p. 185.

Young and three adult dated 25 September and 1 and 2 October, 1919, from Chang-yang Hsien. The adults are not distinguishable as regards colouring from the Tits obtained in north-east Chihli. These latter are certainly distinct from the Japanese bird and should stand as *Parus major artatus* Thayer and Bangs.

9. **Parus venustulus** Swinhoe.

T. & B. p. 184.

An adult and an immature male from Chang-yang Hsien, dated 12 October. On 1 April, 1919, a party of these pretty Tits appeared in a large compound at Shasi, where they spent some time, bathing in a ditch. They then moved on and were not seen any more.

10. **Ægithalus concinnus** (Gould).

T. & B. p. 185.

Three adults from Chang-yang Hsien.

11. **Ægithalus glaucogularis** (Gould).

T. & B. p. 185.

One specimen from Itu, dated 29 February.

12. **Suthora webbiana suffusa** Swinhoe.

T. & B. p. 171.

Two nestlings collected in late summer in Chang-yang Hsien. A single bird seen at Shasi on 14 April.

13. **Dryonastes perspicillatus** (Gm.).

T. & B. p. 167.

Heard on the plain on 29 September. Two specimens from Itu, dated 21 and 24 February.

14. **Dryonastes sannio** (Swinhoe).

T. & B. p. 167.

Two adults. Chang-yang Hsien, early autumn, and Itu, 17 February.

15. **Trochalopteron canorum** (L.).

Young and adult from Chang-yang Hsien at the end of the summer.

16. **Ianthocincla cinereiceps** (Styan).

T. & B. p. 167.

An adult male with a pure black cap, as in Fohkien examples, dated 24 September, and a young male, dated 22 November, with greyish-olive crown, the feathers of which are narrowly edged with dark brown. The secondaries and the rectrices in the adult are broad and truncated at their extremities, whereas in the young bird they are narrower and rounded.

17. **Pomatorhinus macclellandi gravivox** David.

T. & B. p. 167.

Chang-yang Hsien. Two examples sexed male and one sexed female, dated 15 October and 1 January, and 3 February, answer exactly to Père David's description in 'Les Oiseaux de la Chine,' except that the under mandible is livid grey, not yellow. The legs are dark reddish with pale claws. An example, given to me by Mr. Styan, and labelled "Ichang, Nov. 1893," has the upper parts of a somewhat golden brown, and the under mandible yellow.

18. **Pomatorhinus ruficollis styani** Seebohm.

T. & B. p. 167.

Chang-yang Hsien, six specimens, dated 26 August to 29 December. Wing 2·83 to 3·10 in. This Scimitar-Babbler, which occurs on the Yangtse as far east as Chinkiang, is very different from the Fohkien bird, having olive-brown, not chestnut-brown, upper parts and the under-parts greyish- or pale brownish-olive.

19. **Schœniparus brunneus olivaceus** (Styan).

Styan, Ibis, 1896, p. 312.

One example obtained in Chang-yang Hsien at the end of the summer. I saw at the Museum at Harvard the Babbler designated by Thayer and Bangs as *Schœniparus variegatus*

Styan. It is certainly not that bird but seemed very close to *S. b. olivaceus* Styan.

20. **Zosterops palpebrosa simplex** Swinhoe.
T. & B. p. 166.
One seen at Shasi on 4 July.

21. **Pycnonotus sinensis** (Gm.).
T. & B. p. 166.
A common resident at Shasi. A tame bird, seen in the house of a Manchu lady at Kingchow, was a good mimic.

22. **Pycnonotus xanthorrhous andersoni** (Swinhoe).
T. & B. p. 165.
Chang-yang Hsien. Young and adult. End of summer, 16 December and 2 February.
Mr. Bangs pointed out to me that the central China bird had but a slightly brown breast and paler under tail-coverts than Yunnan specimens and that *Læus andersoni* Swinhoe, founded on central China birds, was a good form. This is correct.

23. **Haringtonia leucocephala** (Gm.).
T. & B. p. 165.
Chang-yang Hsien. Two adults with pure white heads and necks.

24. ? ***Iole macclellandi holti** (Swinh.).
♂. Chang-yang Hsien, 30 December, 1918.
Compared with *I. m. holti*, the bill in this specimen appears very slight and shorter by several mm. The back is grey, with a tinge of brown, and the breast is but slightly marked with white. Wing, 3·91 in.; tail, 3·90; culmen, ·75.

25. **Spizixos semitorques** Swinhoe.
T. & B. p. 166.
Shasi. A party seen at Shasi in August.
Chang-yang Hsien. Young and adult.

26. **Sitta europæa sinensis** Verreaux.
T. & B. p. 186.

Chang-yang Hsien, three examples dated 19 September, 23 November, and 15 January, quite similar to birds from N.W. Fohkien.

27. **Anorthura troglodytes szetschuana** (Hartert).
T. & B. p. 172.

A single specimen from Chang-yang Hsien dated 28 November is much darker than any of my specimens of Wrens from northern China and the Lower Yangtze.

28. **Phylloscopus borealis** (Blasius).
T. & B. p. 181.

Seen at Shasi on migration on 29 August and 16 September.

29. **Phylloscopus nitidus plumbeitarsus** Swinhoe.
T. & B. p. 181.

Chang-yang Hsien, two examples dated 4 and 12 September. This Willow-Warbler, which is so abundant in north-eastern China, has not apparently been obtained on the south-east coast or, as far as I know, on the Lower Yangtze.

30. **Phylloscopus superciliosus** (Gm.).
T. & B. p. 181.

Chang-yang Hsien, two examples dated 18 and 19 September. Shasi. Seen or heard: 20 April (?), 16 September, 19 October (?), 18 April.

31. **Herbivocula schwarzi** Radde.

Chang-yang Hsien, one example dated 16 October.

Quite a common bird in northern China on migration. Obtained by Styan at Kiukiang, and also occasionally taken in north-west Fohkien.

32. **Cisticola cisticola tintinnabulans** (Swinhoe).
T. & B. p. 179.

Seen at Shasi on 4 June and 12 July. Apparently breeding.

33. **Acrocephalus arundinaceus orientalis** T. & S.

Acrocephalus arundinaceus magnirostris T. & B. p. 178.

Shasi. Heard singing in willows on 19 and 28 May, and 9 June.

Ichang. Seen about the middle of May.

34. *? **Acrocephalus sorghophilus** Swinhoe.

A small bird, which appeared to me to be of this species, seen at Shasi among grass and willow brush on 19 September, 1918.

35. ***Phragmaticola aëdon** (Pallas).

One example seen in our garden at Shasi on 9 September, 1918, another on the mountains, altitude about 3050 feet, five miles inland on the north bank of the Ichang gorge on 21 May, 1919. This is a very rare bird in south-east China. The migration route is evidently through western Hupeh.

36. **Suya crinigera parumstriata** A. Dav.

T. & B. p. 182.

Chang-yang Hsien. One young bird dated 7 September.

37. **Locustella lanceolata** (Temm.).

T. & B. p. 178.

Shasi. Seen on marshy ground and in rice fields on 29 September.

38. **Buchanga atra cathœca** (Swinhoe).

T. & B. p. 197.

Shasi. Seen passing on 16 and 18 September. Great numbers in fields on 29 September following.

39. **Buchanga leucogenys cerussata** Bangs & Phillips.

T. & B. p. 197.

Shasi. One seen on 18 September.

Chang-yang Hsien. Young, dated 4 and 14 September.

Ichang gorges. Breeding at end of May.

40. **Lanius schach** L.

T. & B. p. 182.

Shasi. Seen in reed beds on 12 January.

Itu. Examples shot in late winter.

41. *__Lanius sphenocercus__ Cab.

One specimen shot at Shasi on 12 January. Wing 4·75 in. Total length 11·9 in. Iris dark brown, bill black, lower mandible whitish at base. Stomach contained a caterpillar and remains of small beetles.

42. __Lanius lucionensis__ L.

T. & B. p. 183.

Summer at Shasi. Seen 9, 27, 29 June, 6 July, 4 August (young bird), 4 September.

43. *__Lanius tigrinus__ Drap.

One migrant seen at Shasi on 18 May.

Two seen at Ichang on 27 May probably had a nest.

44. __Pericrocotus cinereus__ Lafresn.

One seen at Shasi on 19 October, 1918.

45. __Campophaga melanoptera__ Rüppell.

T. & B. p. 165.

One example from Chang-yang Hsien dated 3 September.

46. __Oriolus indicus__ Jerd.

T. & B. p. 196.

Summers at Shasi, at Ichang and in Yangtze gorges. In 1918 first heard at Shasi on 30 April. Young seen there on 6 September.

47. __Spodiopsar cineraceus__ (Temm.).

T. & B. p. 196.

Shasi in winter.

48. __Æthiopsar cristatellus__ (L.).

T. & B. p. 196.

Shasi and lowlands generally. Abundant and resident.

49. __Alseonax latirostris__ (Raffles).

T. & B. p. 162.

Seen at Shasi on 14, 16, 17, 19 September, 10 October, 8 May.

50. **Hemichelidon sibirica** (Gm.).

Seen at Shasi on 4 and 9 September.

Chang-yang Hsien. Two immature birds dated 30 August and 6 September.

51. **Siphia parva albicilla** (Pall.).

T. & B. p. 163.

Seen at Shasi on 14, 16, 17, 22, 24, 29 September.

52. **Cyanoptila cumatilis** Thayer & Bangs.

Cyanoptila cumatilis T. & B., Bull. M. C. Z., May 1909, no. 52, p. 141 ; T. & B., M. M. C. Z. 1912, no. 4, p. 163.

Chang-yang Hsien, ♀, 26 September, 1918.

From an examination of the fine series of this Flycatcher in the Museum at Harvard, it appears quite clear that the bird described by David and Oustalet and figured in the "Atlas" of 'Les Oiseaux de la Chine' is an adult example of this very distinct form. It is chiefly distinguished from the Japanese bird by the greenish-blue, unspotted, upper parts and the blue throat and breast. In the Harvard examples the blue breast is separated from the white abdomen by a blackish marginal band. In the adult Japanese bird the throat and breast are black just washed with blue, and the back is smalt-blue, with more or less distinct markings in the shape of black shaft-stripes, chiefly on the scapulars and upper tail-coverts. I have unspotted examples from Chinkiang and Shaweishan (30 miles east of the mouth of the Yangtze), but all my specimens from Fohkien are more or less spotted above, and are therefore referable to the Japanese bird. I have no examples from north-east China, where this Flycatcher is apparently very rare. Père David, who obtained specimens at Peking, makes no mention of spots on the upper parts.

The Japanese Blue and White Flycatcher apparently travels up the coast through Fohkien, Chekiang and S. Kiangsu to Shaweishan, where it meets the unspotted green-backed form, and thence crosses to Japan.

53. **Terpsiphone incii** (Gould).
T. & B. p. 164.
Shasi, 18 May, 19 October, 1918; 2 May, 1919.
Chang-yang Hsien. Two examples taken at end of summer. Summers at Ichang and in neighbouring mountain districts.

54. ? **Pratincola torquata prjewalskii** Pleske
A Stonechat seen once at Shasi.

55. **Oreicola ferrea haringtoni** Hart.
T. & B. p. 178.
Chang-yang Hsien. ♀ 21 September, 1918. Primaries not fully grown.

56. **Henicurus sinensis** Gould.
T. & B. p. 175.
Chang-yang Hsien. Three examples dated 8 October, 1918, 6 and 7 January, 1919.

57. **Rhyacornis fuliginosa** (Vigors).
T. & B. p. 177.
5 ♂, 3 ♀, dated 7, 9, 14 October, and 31 December, 1918, 2, 3, and 4 January, 1919.

58. **Chaimarrornis leucocephala** (Vigors).
T. & B. p. 176.
Chang-yang Hsien. ♂ ad. 4 January, 1919.

59. **Phœnicurus auroreus** (Pall.).
T. & B. p. 176.
Chang-yang Hsien. Juv. August 1918. ♀. 9, 18, and 30 September. ♂. 8, 19 October, 1918.
Apparently a common breeding species in the mountains.
Shasi. Seen in gardens on migration on 24 March, 1918, 10 and 19 October, 1918, 16 and 24 March, 1919.

60. **Copsychus saularis** (L.).
T. & B. p. 177.
One example from Itu. A common resident on the plains.

61. **Myiophonus cæruleus** (Scop.).
T. & B. p. 168.
Chang-yang Hsien. Young and adult.
The young are plain, very dark violet-blue above, and dull black below.

62. **Merula mandarina** Gould.
T. & B. p. 173.
Common resident on the plains.

63. ***Merula castanea gouldi** Verr.
T. & B. p. 173.
On 5 December, 1918, I shot in our garden at Shasi a specimen of this fine bird, which was originally discovered by Père David in western Szechuan, and has recently been obtained in the Tsing Ling (Shensi Province). It is apparently a female of the year, and had probably been driven down from the Hupeh Mts. by the bad weather prevailing at the beginning of the month it was shot in. The soft parts were coloured as follows :—Iris dark brown, rim of eyelid and gape yellow, bill dull yellow with dark tip and base, legs dull yellowish with brownish-grey claws. Wing 5·75 in.; tarsus 1·28 in.; total length 10·5 in. The stomach, which had a dark red-brown lining, was corrugated, and contained only two very small snail-shells.

64. ***Merula obscura** (Gm.).
Chang-yang Hsien. ♀ (bird of year), 20 September, 1918.

65. **Merula naumanni** (Temm.).
T. & B. p. 174.
Chang-yang Hsien. 14 & 30 December.

66. **Merula fuscata** (Pall.).
T. & B. p. 175.
Chang-yang Hsien. 12 December, 1918.

67. **Oreocincla varia** (Pall.).
Oreocincla aurea T. & B. p. 174.
Chang-yang Hsien. Three examples.
Shasi. One seen on 19 October, 1918.

68. **Petrophila solitaria pandoo** Sykes.
Petrophila solitarius solitarius T. & B. p. 175.
Chang-yang Hsien. ♂ ad. dated 25 September, 1918.

69. **Eophona melanura** (Gm.)
T. & B. p. 191.
Common resident.

70. **Passer montanus** L.
T. & B. p. 191.
Abundant resident.

71. **Passer rutilans** Temm.
T. & B. p. 191.
Seen on 21 May, 1919, at the "Bungalow," alt. 3051 ft., about 5 miles north of Ichang Gorge, apparently breeding.

72. **Emberiza aureola** Pall.
T. & B. p. 194.
Shasi. Very abundant. One seen on 1 September, 1918, in gardens; many flocks on the marshes and cleared paddy-fields on 29 September, all birds composing the flocks apparently moulting.

73. **Emberiza spodocephala melanops** Blyth.
T. & B. p. 195.
On 14 May, 1918, a male of this Bunting was singing perched on a Wutung-tree (*Sterculia platanifolia*) in our garden. He reappeared there on the 22nd, 25th, and 26th, and on the 25th a female turned up, which was apparently mated with our visitor. The pair had doubtless a nest in the close vicinity, as was plainly shown by the anxious behaviour of the cock-bird. The following year, on 17 April, I saw several of these Buntings in the bean-fields, and on the 2nd May following a single male was again seen in the garden.

This Bunting is very rare on the Lower Yangtze. Its breeding-quarters are without doubt the plains and banks of the Yangtze in central China.

74. **Emberiza cioides** Brandt.

Emberiza cioides castaneiceps T. & B. p. 195.

Chang-yang Hsien. Juv. and ad. 4 September (juv.), 15 September, 29 November.

Ichang, 27 May, 1919. Seen breeding on hills of the south bank.

75. **Emberiza elegans** Temm.

T. & B. p. 194.

Chang-yang Hsien. End of summer. Probably breeding.

76. ***Emberiza tristrami** Swinhoe.

Seen on hills south of Ichang Harbour on 27 May, 1919. Probably breeding.

77. **Cotile fohkienensis** La Touche.

T. & B. p. 161.

Sand-Martins seen at Shasi on 12 May, 1918 (flying down river), 15 June, 1918, and 13 May, 1919 (adult and young hawking in company with *H. gutturalis* and *H. nipalensis*) were most probably of this species.

78. **Hirundo rustica gutturalis** Scop.

Common in summer at Shasi.

First appearance 1918 : 25 March (one).

Time of departure of local birds : about end August.

Travellers seen 5–8 November, 1917.

First appearance 1919 : 22 March (hawking over river and bund) ; 25 and 26 March (many).

79. **Hirundo daurica nipalensis** Hodgs.

T. & B. p. 162.

Summer visitant to Hupeh.

80. ? ***Chelidon urbica whitelyi** Swinh.

A Martin with very white rump and underparts seen on 21 May flying over the mountains, 5 miles north of Ichang Gorge. Alt. about 3000 ft.

81. **Motacilla leucopsis** Gould.

T. & B. p. 188.

Chang-yang Hsien, 15 October.

82. ? **Motacilla ocularis** Swinh.
T. & B. p. 188.

A common migrant or winter visitant all over central and eastern China, but I have only one note on a Wagtail seen at Shasi on 19 October, which was of this or of the preceding species.

83. **Motacilla boarula melanope** Pall.
T. & B. p. 188.
Shasi. Common enough in winter.

84. **Motacilla flava simillima** Hartert?
T. & B. p. 188.
Yellow Wagtails, either this or *M. borealis*, seen on marshy fields on 29 September, 1918.

85. **Anthus spinoletta blakistoni** Swinh.
T. & B. p. 189.
Shasi. Winters on the plain.

86. **Anthus richardi** Vieill.
T. & B. p. 189.
Shasi. Noticed on the plain on 29 September, 1918.

87. **Alauda arvensis** subsp.?
Shasi. In winter.

88. **Alauda gulgula cœlivox** Swinh.
Shasi. Resident or breeding.

89. **Gecinus canus guerini** Malh.
T. & B. p. 160 (part).

A single female example from the low hills at Itu is apparently referable to this subspecies. I did not collect any Green Woodpecker at Shasi, although these birds are common there, but the probabilities are that *G. c. guerini* extends to the foothills east of Ichang.

90. **Gecinus canus jacobsii**
Picus canus guerini T. & B. p. 160 (part).
Gecinus canus jacobsii La Touche, Bull. B. O. C. xl. 1919, p. 50.

Near *G. c. ricketti* of Fohkien but greyer below, more golden (less olive) green above, with darker garnet-coloured forecrown and less black over the eye. Base of lower mandible bright yellow.

Chang-yang Hsien. Common resident in the mountains of this district. I saw the fine series collected by Zappey. It is plainly divisible into two sections :—*G. c. guerini* and a dark bird, some of which, obtained in the Hupeh Mts., are presumably of this form. Unfortunately, the Museum of Comp. Zoölogy had not any series from other parts of China, so that exact identification of the birds in the Zappey collection was difficult.

91. ***Dryobates hyperythrus subrufinus** Cab. & Heine.
T. & B. p. 160.

Chang-yang Hsien. One ♂ dated 27 September, 1918.

The specimen collected is a bird of the year with dark umber-brown underparts and remains of nestling plumage about the head and neck. This is the first record of this Woodpecker in Hupeh. Zappey obtained one in Szechuen. I have a female from Shanghai and a long series from north-east Chihli, where it is very common on passage.

92. **Dryobates major cabanisi** (Malh.).

Dryobates cabanisi cabanisi T. & B. p. 160.

Abundant both in Chang-yang Hsien and on the plain. The few examples collected are variable, much as in birds from the Lower Yangtze, as regards the tints of the underparts and the spotting of the secondaries.

93. **Dryobates pygmæus clementii.**

Yungipicus scintilliceps scintilliceps T. & B. p. 161.

Iyngipicus pygmæus clementii La Touche, Bull. B. O. C. xl. 1919, p. 51.

The Spark-headed Woodpecker obtained by me in the Hupeh Mts. differs as follows from the north-eastern and south-eastern China birds :—The white on the back is more extensive than in *kaleensis*, resembling in this respect *scintilliceps* from northern Chihli. The axillaries are unmarked

white as in *scintilliceps*, but the underparts are of a richer ochreish brown than even *kaleensis*, while the streaks on the underparts resemble those of the latter form, but are perhaps rather less heavy. A cursory examination of the magnificent series collected by Zappey showed me, however, that great variation occurs among Hupeh and Szechuen birds. But, again, no examples from other parts of China were available for comparison.

94. **Picumnus innominatus chinensis** Hargitt.
T. & B. p. 161.
Chang-yang Hsien. One example 17 September, 1918.

95. ***Iynx torquilla** L.
Chang-yang Hsien. Two examples taken at the end of the summer.
Shasi. One seen on 4 September.

96. **Alcedo atthis bengalensis** Gm.
T. & B. p. 157.
Common resident.

97. ***Ceryle rudis** L.
Common resident.

98. **Caprimulgus indicus jotaka** T. & S.
T. & B. p. 158.
Shasi. One seen on 16 May.

99. **Acanthyllis caudacuta** (Lath.).
T. & B. p. 159.
One seen flying about the "Bungalow," in the mountains, 5 miles north of Ichang Gorge, about 3000 ft., on 21 May, 1919.

100. **Cuculus canorus telephonus** Heine.
T. & B. p. 159.
Shasi. Heard calling on 24 May, 9 June: a female seen on 1 and 2 May.
Mountains north of Ichang Gorge. Heard on 21 May.

101. **Cuculus micropterus** Gould.
T. & B. p. 159.
Shasi. Heard and seen on 23 May.
Ichang (low hills). Heard on 18 May, and heard and seen on 27 May.

102. ***Clamator coromandus** (L.).
Chang-yang Hsien. A young bird in nestling plumage shot at the end of the summer.

103. **Eudynamis honorata** (L.).
T. & B. p. 159.
Chang-yang Hsien. ♂ imm. 13 September.

104. **Asio otus** vel **accipitrinus**.
One or two Owls, either Long-eared or Short-eared, seen during winter at Shasi.

105. ***Syrnium aluco harterti**.
Syrnium aluco harterti La Touche, Bull. B. O. C. xl. 1919, p. 50.
A single example of a Wood-Owl, sexed a male by the collector, obtained on 16 October, 1918, in a forest on the border of Hupeh and Hunan, alt. 4500 ft. (Changlo Hsien) resembles the Himalayan Wood-Owl *S. nivicola*, but differs from it in being throughout much darker, and in having the barring of the underparts very dark, sharply defined, and narrow. Wing 289 mm.
There are in the British Museum two Wood-Owls which are not unlike the Hupeh bird: one from Formosa, collected by Dr. Moltrecht in March 1908, and another from Yunnan (Styan collection). An example of a Wood-Owl, shot by Swinhoe near Peking, is also in the Museum, but this is a very grey bird belonging to another form.

106. **Glaucidium whitelyi** (Blyth).
T. & B. p. 156.
Itu. Two examples, 10 February, 1919.

107. ***Aquila chrysaëtos** L.

An immature female sent to me alive from Ichang by Mr. P. B. de Rautenfeld, Commissioner of Customs, lived for a few weeks in our garden at Shasi, but succumbed to the summer heat. Wing 25½ in.: total length 35½ in. Iris rich brown; gape, cere, and feet bright yellow. Base of bill bluish, rest of bill dark brown or blackish.

108. ***Hieraëtus fasciatus** (Vieillot).

A leg of a Bonelli's Eagle, shot in the Hupeh Mts., was sent to me by the late Father Anselme de Hemptinne.

109. **Milvus lineatus** Gray.

Milvus melanotis T. & B. p. 155.

Common resident.

110. **Circus** sp.

Harriers occur commonly on the plain. Some seen on 29 September, 1918, appeared to be *C. spilonotus*.

111. **Buteo buteo japonicus** T. & S.

Buteo buteo plumipes T. & B. p. 155.

Shasi. Seen in November.

112. ?**Accipiter nisus melanoschistus** Hume.

?*Accipiter nisus lodygini* T. & B. p. 154.

Sparrow-hawks were seen on several occasions at Shasi.

113. **Accipiter gularis** (T. & S.).

T. & B. p. 155.

This small Sparrow-hawk appears to be a favourite with hawk-fanciers. I saw, on 9 June, 1918, at Kingchow (near Shasi), in the collection of a Manchu lady, a tame male of this species. The iris was burnt-sienna. I saw other captive birds the same day, and on 24 June following another tame bird, this one an adult female.

114. **Falco subbuteo** L.

Shasi. 20 June, 31 July, 12 September (3). A Hobby flew by our house regularly every evening towards 6 P.M. during September 1918, catching Sparrows as he flew by.

The Hobby does not occur in China except on migration or during summer, and I doubt very much the possibility of there being a resident Chinese race ranging between the Tsing Ling Mts. and Swatow (see *Falco streichi* Hart. & Neum. Vög. pal. Fauna, p. 1074).

115. **Cerchneis tinnunculus** subsp.?
Cerchneis saturata T. & B. p. 155?
Kestrels are of common occurrence at Shasi.

116. **Turtur chinensis** Scop.
T. & B. p. 144.
A common resident.

117. **Turtur orientalis** Latham.
T. & B. p. 144.
Chang-yang Hsien. Immature bird shot in autumn.

118. **Turtur humilis** Temm.
T. & B. p. 144.
Shasi; 3 May.
Ichang. Seen in gardens at the end of May.

119. **Bambusicola** sp.
Ichang Gorge. Heard on 21 May, 1919.

120. **Phasianus colchicus hemptinnii.**
Phasianus holdereri T. & B. p. 140 (part).
Phasianus colchicus hemptinnii La Touche, Bull. B. O. C. xl. 1919, p. 51.

In their paper, Messrs. Thayer and Bangs describe a Pheasant which they call *Phasianus holdereri* (a synonym of *Ph. c. strauchi* Przw.), and they mention that this Pheasant was taken at altitudes ranging from 2500 to 6000 ft. I was unable to procure a series of the common Ichang Pheasant from the highlands of Hupeh, but a few specimens from the low hills on the south bank of the Yangtze between Ichang and Shasi and from a place 30 miles north of Shasi (undulating country connecting the northern hills with the plain) were sent to me by Fathers A. de Hemptinne and C. Clément of the Belgian Franciscan Mission. These Pheasants proved

to be of great interest, forming evidently a link between the Pheasant of the mountains and that of the plain. The examples obtained from Mopanchow, in the Sungtze district between Ichang and Shasi, came from low hills covered with woods of small pines, and are very closely related to *P. decollatus*. The birds from Shihlipu, about 20 to 30 miles north of Shasi, were shot in low, undulating country and show affinity with the Pheasant from the plains, having greyer backs, a more pronounced white collar, and some of the specimens having the sides of the neck more purple. I compared this series of Pheasants with the fine series of *P. strauchi* in the Tring Museum, and Dr. Hartert agreed with me that the bird from the lower hills of Hupeh is a distinct form *. I subsequently saw the series collected by Zappey, but I had not my specimens to compare with them. It appeared evident, however, that the birds obtained and described by me form a link (as mentioned above) between the Pheasant of the hills and that of the plain. The following are the characteristics of this race :—Crown deep oily-green, concolorous with hind neck, eyebrow absent or very slightly developed, sides of neck more green than purple, white collar slight, always broken in front, flanks and lower hind neck dark, back bright glossy green, wing-coverts sandy grey. It will be noticed that these are practically the same characteristics as those given by Thayer and Bangs for their *P. holdereri*. Probably the Ichang Pheasant, procured by Zappey, is a race of Swinhoe's *decollatus*.

121. **Phasianus colchicus** subsp.?

Phasianus torquatus kiangsuensis T. & B. p. 140.

Pheasants shot on the plain near Shasi appeared to me to be much darker than Lower Yangtze birds. I was,

* Since the above was written I have seen that Dr. Hartert has now united *P. hemptinnii* with *P. torquatus* of the Lower Yangtze, and he tells me that he cannot separate the two forms! I must differ from him and would point out that these dark-headed, eyebrow-less, green-backed Hupeh Pheasants are closely related to *P. decollatus* Swinhoe, and only distantly so to the pale-headed, eyebrowed, and blue-backed *torquatus*, which latter form ranges from Shanghai to Kiangsi, and possibly Hankow.

however, able to preserve but one example in faded spring dress, which cannot be distinguished from *Phasianus c. torquatus*.

As is now usual in the vicinity of the China ports open to foreign trade, Pheasants at Shasi are scarce, and good shooting is only possible at some distance from the port. The Pheasants have been destroyed by being shot out of season, and by wholesale massacre for the benefit of canning and cold storage factories, the treaty-port markets, and mail-boats. Protests and petitions from foreign residents in central and north China have so far been unsuccessful to obtain adequate protection for the fast disappearing game of the Yangtze valley, which in a very few years will be as extinct as the "Dodo."

122. **Syrmaticus reevesii** (Gray).
T. & B. p. 143.

Apparently very common in Chang-yang Hsien, whence I received several examples.

123. **Chrysolophus pictus** (L.).
T. & B. p. 143.

Abundant in Chang-yang Hsien and other mountain districts of Hupeh. The Golden Pheasant is, it is said, very hard to shoot, as it keeps to the thick woods and coverts.

124. **Tragopan temminckii** (J. E. Gray).
T. & B. p. 140.

Occurs on the higher mountains of Chang-yang Hsien, but is collected with difficulty.

125. **Coturnix coturnix** L.

Quail are abundant on the plain, but I have only indefinite records of this species. Thayer and Bangs record a large series of the Japanese Quail from Ichang and Chang-yang Hsien.

126. **Turnix blanfordi** Blyth.
T. & B. p. 143.

Common on the plain near Shasi.

127. **Gallinula chloropus parvifrons** Blyth.
Gallinula chloropus orientalis T. & B. p. 145.

128. **Gallicrex cinereus** Gm.
T. & B. p. 145.
Shasi, 29 September. Apparently very common as elsewhere on the Yangtze.

129. **Grus** sp. ?
I have no written record of Cranes from Shasi, but one evening during winter, while waiting for duck, I heard a party passing over.

130. * **Hydrophasianus chirurgus** (Scop.).
Summer, near Shasi.

131. **Microsarcops cinereus** Blyth.
T. & B. p. 146.

132. **Charadrius dominicus fulvus** Gm.
T. & B. p. 147.
Shasi, 29 September. Probably common in winter.

133. **Tringa ochropus** (L.).
T. & B. p. 147.
A common winter bird on the plain.

134. * **Tringa fusca** (L.).
Shasi market.

135. **Tringa hypoleuca** (L.).
T. & B. p. 147.
Shasi. Common in winter.

136. **Gallinago gallinago** (L.).
T. & B. p. 148.
Shasi. Common from September to the spring.

137. **Gallinago stenura** Horsf.
T. & B. p. 148.

138. **Gallinago megala** Swinhoe.
T. & B. p. 148.
This and the preceding species are common on passage in April, May, August, and September.

139. **Scolopax rusticola** L.
T. & B. p. 148.
Shasi. Common in winter.

140. **Rostratula capensis** (L.).
T. & B. p. 148.
Shasi, 29 September. Doubtless common.

141. * **Larus argentatus vegæ** Stejn.
Shasi. Common on the river in winter.

142. **Larus ridibundus** L.
T. & B. p. 146.
Shasi. Common inland on creeks, occasionally seen on the river.

143. * **Sterna tibetana** ?
A party of medium-sized Tern seen flying down river on 20 June.

144. **Phalacrocorax carbo** (L.).
T. & B. p. 153.
Shasi. Seen.

145. **Ardea cinerea jouyi** (Clark).
Ardea cinerea jouyi T. & B. p. 149.
Shasi. Common and probably resident.

146. * **Ardea manillensis** Mey.
Plains near Shasi.

147. **Herodias alba** (L.).
T. & B. p. 149.
I was glad to see on 29 September, 1918, several Great Egrets on the plain near Shasi.

148. **Ardeola bacchus** Bp.
T. & B. p. 150.
Shasi Plain. Seen on 29 September.

149. **Nycticorax nycticorax** (L.).
T. & B. p. 150.
Shasi. Seen in summer.

150. **Botaurus stellaris** (L.).
T. & B. p. 150.
Shasi. Common in winter.

151. **Dupetor flavicollis** (Lath.).
T. & B. p. 150.
Shasi, 29 September.

152. * **Cygnus** sp.
Shasi. A flock of eleven birds seen flying down the river on 10 February, 1918.

153. ***Anser anser rubrirostris** Hodgs.
Shasi market, winter 1917–1918, and in February, 1919.

154. **Anser segetum** vel **segetum serrirostris.**
T. & B. p. 151.
Shasi market. Common in winter.

155. ***Anser middendorffi** Severtzoff.
Shasi market, one specimen.

156. * **Casarca rutila** (L.).
Shasi. Common in winter, seen in market.

157. * **Nettopus coromandelianus** (Gm.).
Shasi. One seen on 24 June, 1918. It perched on the Meteorological Observatory and remained there some time, preening its feathers, without apparent fear of the wind gauges.

158. **Anas platyrhyncha** L.
Anas platyrhynchus T. & B. p. 151.
Shasi. Common in winter.

159. * **Anas zonorhyncha** Swinh.
T. & B. p. 151.
Shasi. Common in winter.

160. * **Eunetta falcata** (Pall.).
Shasi market, 30 January and 25 February, 1918. Common in winter.

161. * **Chaulelasmus streperus** (L.).
Shasi market, 25 February, 1918 (one).

162. **Nettium formosum** (Georgi).
T. & B. p. 151.
Shasi market, 30 January and 25 February, 1918 (common).

163. **Nettium crecca** (L.).
T. & B. p. 151.
Shasi. Abundant in winter.
A huge flight of Duck, probably composed of this species went over Shasi at dusk on 31 December, 1917. The flock must have comprised tens of thousands of birds; the noise of their wings was like that of an approaching earthquake, and the walls of the house I was in shook as they went over.

164. * **Mareca penelope** (L.).
T. & B. p. 151.
Shasi market, 30 January, 1918 (one or two).

165. * **Dafila acuta** (L.).
T. & B. p. 151.
Shasi market, 30 January and 25 February, 1918. Common in winter.

166. * **Spatula clypeata** (L.).
Shasi market, 30 January and 25 February, 1918 (several).

167. * **Fuligula ferina** (L.).
T. & B. p. 152.
Shasi market, 25 February, 1918 (two).

168. * **Fuligula rufina** (Pall.).
T. & B. p. 152.
Shasi market, 30 January, 1918 (two).

169. * **Fuligula baeri** Radde.
Shasi market, 25 February, 1918 (one).

170. * **Fuligula ferruginea** Gm.
Shasi market, 25 February, 1918 (two or three).

171. **Fuligula cristata** (L.).
T. & B. p. 152.
Shasi market, 25 February, 1918 (three).

172. **Mergus merganser** L.
T. & B. p. 152.
Shasi. Abundant in winter.

173. **Podiceps minor philippensis** (Bonnat.).
Tachybaptes ruficollis poggei T. & B. p. 146.
Shasi. Common on ponds and on river in winter.

XXVII.—*The Arabian Ostrich.*

By Douglas Carruthers, M.B.O.U.

The interesting note in the 'Field' of 22 April last to the effect that eggs of the Arabian Ostrich had been recently safely brought, by air and sea, in 30 days from the nest in northern Arabia to London, and had been placed in an incubator in the Zoological Gardens, tempts me to send you some notes of my own, collected over many years, on this interesting and little-known species.

First of all as to the actual locality whence these eggs were obtained by the Sulubbi hunter and brought in to Ramadi. "Three hundred miles from Baghdad, roughly half-way between Baghdad and Jerusalem," brings one to the very centre of the southern Syrian Desert, in the neighbourhood of Jebel Anaza. This is a region we know little or nothing about. Musil, the Austrian explorer, is the only European who has been across it (in 1909), although Leachman in 1912 skirted its eastern flank. It is therefore

quite possible that the Ostrich still exists as far north as this; for although in old days it ranged right up to the Euphrates, it has not been seen in the true Syrian desert for over a century. On the other hand the locality is somewhat unlikely. It is of high altitude—over the 3000-ft. contour line,—a hard arid steppe, with a large area of volcanic (Harra) tract and practically without sand. But the fact that the region is uninhabited—even for a desert,—being seldom visited by nomad graziers, may outbalance this, and allow the district to be a safe refuge for such desired game; in Bedouin life an Ostrich hunt is looked upon as quite as lucrative a venture as a successful raid. If "half-way between Baghdad and Jerusalem" was the Sulubbi's description of where he found the eggs, it may not have been in the southern Hammad at all, but on the edge of the Nafud sand-bed, which is well known as being the stronghold of the Ostrich in northern Arabia. The north-eastern edge of the Nafud is actually 330 miles from Baghdad, while the oasis of Jauf, which marks the locality, is generally considered the half-way house between Irak and Syria or Palestine. Nearly all Arabian travellers in that region have mentioned the Ostrich, the last being the late Capt. Shakespear, C.I.E., who had an Ostrich chick brought to him on 24 April, 1914, at his camp on the northern edge of the Nafud, two marches east of Jauf. Probably the very best locality for Ostriches (in northern Arabia) is the north-western Nafud, between Jauf and the Hejaz railway, including the Basaita plain and the Tubaik hills. This region is very little visited by Bedouins. It is practically waterless, and except for the "Samh" plant, is without much pasture. The Basaita plain has a reputation for exceeding flatness (in a country where there is not much relief). There is absolutely no cover. Southwards the Nafud grants ample pasture and a permanent and safe retreat, being an area of over 35,000 square miles of sand-dunes.

Northwards the Ostrich ranges into the black-stone plain—the Ardh-es-Suwan, where I saw three in the Wadi Hedrij on 9 February, 1909. This locality is probably their most northern limit towards Palestine at the present day, although

they may have ranged right up to the frontiers of Moab within living memory. Tristram claimed to possess a skin which had been obtained in the Belka—the desert frontier of Trans-Jordania.

Westwards the Ostrich extends to the Hejaz railway. In Tebuk I saw a skin for sale, and in the Wadi Akhdar I saw tracks. We also know of it from Doughty, who in 1877 saw "fresh footprints" on the northern edge of the Kheibar (volcanic) Harra. He says "it descends into the plain of Medain Saleh; I have seen her footing in Ethlib," which is a hill in the Hejr plain. Further, while sojourning in the castle at Medain Saleh, hunters brought in eggs which he ate as "a well-tasting omelette"; while an Heteym hunter of his acquaintance made his annual income by obtaining two skins against the arrival of the Mecca pilgrims. These he sold for 40 to 45 reals each (Maria Theresa crowns). This same hunter once caught two chicks, which grew up in the courtyard of the castle. The Hejaz railway has doubtless expelled the Ostrich from its immediate neighbourhood.

Central Arabia, Nejd proper, is probably not inhabited by the Ostrich. It has never been recorded, although in certain portions there is no reason why it should not exist. Nor has it been reported from the Persian Gulf side, the Hasa and Oman coasts. But we know it occurs on the borders of the great southern wilderness—the Ruba el Khali.

Great interest lies in the present-day conscribed range of the Arabian Ostrich as contrasting with its wide habitat in comparatively recent times. It may well have been named "syriacus" in those days, for it roamed over the whole Syrian desert, right up to the banks of the Euphrates. Nowadays the Ostrich is purely Arabian, for it is generally accepted that the undefined boundary between Arabia proper and Syria is the 30th parallel of latitude. The desert triangle north of this line, which extends right up to Aleppo and is bounded by the Euphrates on the east and the settled lands of Syria and Palestine on the west, cannot be considered as anything but Syrian, although it is often misnamed Arabian. Over this whole region, which is hard steppe, without any

special feature except small ranges of hills and dry wadi-beds, the Ostrich used to roam. Our knowledge of it depends on reliable witnesses, such as British officers and East India Company officials. By curious chance, this region was better known two centuries ago than it is to-day. For a brief period in the early 18th century the overland Syrian desert route became a favourite one for officers and others in the service of the East India Company, and we have many valuable diaries of journeys accomplished between Aleppo and Basra.

The last record of the Ostrich in the neighbourhood of the Euphrates was in 1797, when Olivier mentions them in the desert west of Rehaba, *i. e.* about 23 miles due south of Deir ez Zor.

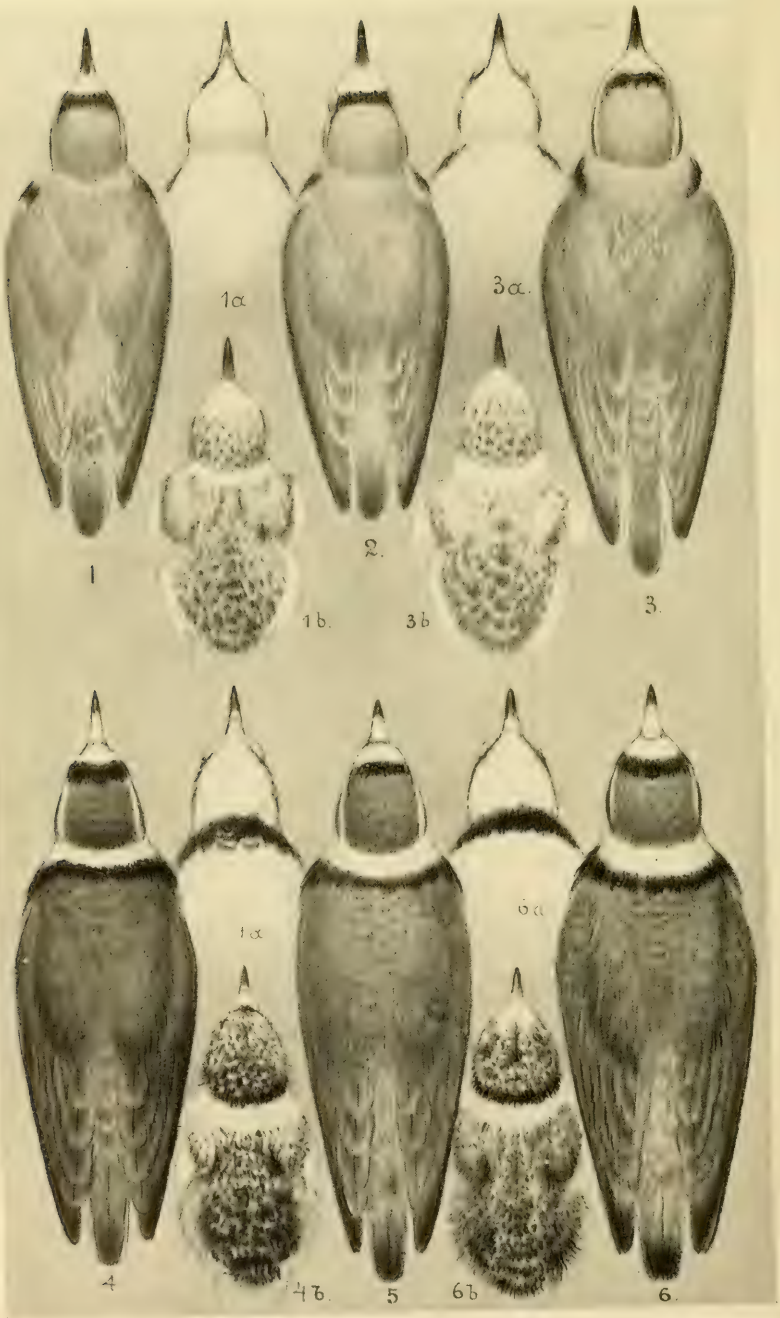
In 1789, Major John Taylor, of the "Bombay Establishment," saw "several ostriches and found their eggs lying on the bare ground," 30 December, just south of the Wadi Hauran, half-way between it and the village of Kubaisa (11 miles west of Hit).

In 1781, Eyles Irwin "in the service of the East India Co.," whilst traversing the desert route from Aleppo to Baghdad found a nest (28 March) at a point roughly half-way between Palmyra and the Euphrates, near the watering called Jubb Ghanam.

Ten years earlier, General Sir Eyre Coote saw Ostriches on 24 February two days' east of Palmyra, and he records the cupola of a tomb close to Taiybe (a small village 50 miles north-east of Palmyra) as being adorned with Ostrich's eggs. He also found an egg (*in situ*) in the same locality. This is probably the most northern record of the Ostrich, a latitude corresponding to Malta and Tangier.

In 1750, Bartholomew Plaisted, also of the East India Company, saw on 9 July an Ostrich in the same locality where Taylor had found them—near the mouth of the Wadi Hauran.

As to their existence on the Lower Euphrates, we only have the record of the Portuguese traveller, Pedro Teixeira, who in 1604 found their feathers two days' west of Basra.



TYPES OF CHARADIINÆ.

1, 1a, 1b.	LEUCOPOLIUS	RUFICAPILLUS.	4, 4a, 4b.	CHARADRIUS	SEMIPALMATUS.
2.	,,	NIVOSUS.	5.	,,	DUBIUS.
3, 3a, 3b.	,,	ALEXANDRINUS.	6, 6a, 6b.	,,	HIATICULA.

XXVIII.—*On the Significance of certain Characters in some Charadriine genera, with a provisional classification of the Order* Charadriiformes. By Percy R. Lowe, M.B.O.U.

(Plate VI. & Text-figures 10–12.)

I propose to deal first with what might be called the "Golden-Plover Association," an assemblage comprised of the following species and subspecies :—

The Golden Plover, *Pluvialis apricarius apricarius* (L.).
The British Golden Plover, *P. apricarius oreophilus* Meinertz.
The American Golden Plover, *P. dominicus dominicus* (Müller).
The Pacific Golden Plover, *P. dominicus fulvus* (Gmelin).
The Grey Plover, *Squatarola squatarola squatarola* (Linn.).
The American Grey Plover, *S. squatarola cynosuræ* Thayer & Bangs.

Considered as a single association, this Plover-group would appear to be admirably specialised, as far as colour-pattern is concerned, for the regions which may be said to be its typical home—viz., the Tundras of the Old World and the Barren-grounds of the New. In the Tundras one of the most characteristic features of the flora is the lichen known as Reindeer Moss (*Cladonia rangiferina*), while in the Barren-grounds true mosses are met with. On the face of it, nothing could seem to be more admirably adapted to such a floral background than the colour-pattern of the dorsal surface of the adult or nestling of any of the above-mentioned species or subspecies ; indeed, some might be inclined to quote it as a wonderful illustration of the direct evolutionary influence of the immediate tundral environment aided by natural selection.

We may pause, however, to reflect that, firstly, this immediate environment on the nesting-grounds of these

arctic Tundras is not, as we have just noted, identical in the Old and New Worlds; secondly, quite a number of other Limicolæ, with very different colour-patterns, appear to get on just as well in the nesting-season in apparently identical environmental surroundings, differing species being even found in the closest juxtaposition; thirdly, Golden Plovers breed at the present time in areas (*e.g.* in the British Isles) which were once Tundras but are now, with the return of more genial conditions, grass- or heather-clad moorlands, an immediate environment which could not be said to bear a very close resemblance to that of the Tundras; and fourthly, both the Grey and the Golden Plovers are equally at home in the Old and New Worlds where, as we have seen, the floral picture presented by the nesting-areas is not identical.

In addition to these facts, we may point out that the colour-pattern in the downy nestling of the Grey differs from that of the Golden Plover; for, apart from details, the Grey Plover nestling is conspicuous for the white collar at the back of the neck, a feature entirely wanting in the Golden nestling; and it is interesting to note that this character is very typical of the nestlings of the Vanellinæ (*Vanellus* being a familiar instance) in whatever part of the world they are met with.

The same character is met with in the nestlings of the Ringed-Plover Association (*Charadrius* = *Ægialitis*, olim); so that here we have a conspicuous colour-pattern character occurring in the nestlings of three distinct groups of Plovers; groups, moreover, which are world-wide in distribution and in which the character of the immediate nesting-ground is anything but similar; so that, if we are justified in drawing any conclusion at all, it is that this white neck-ring character in the nestlings of all the heterogeneous forms alluded to, is a factor which has been inherited from some common pluvialine ancestor, and has not arisen as the direct result of environment aided by natural selection.

Before passing on to our more particular object, there are other points worthy of a moment's consideration. The

Tundras are and were presumably always associated with glacial conditions, and the various glacial onsets coincided with the Pleistocene, as far, at any rate, as the Northern Hemisphere and our immediate thesis is concerned. If, therefore, it is held that the colour-pattern typical of the Golden-Plover Association was the direct outcome of a response to the tundral environment, it follows that this colour-pattern is no older than the Pleistocene. It is, of course, impossible to prove the contrary. Colour-pattern in any particular phylum or group may have been, in the past, changeable and evanescent; yet, from the evidence which I shall presently produce, and from evidence which I have already produced *, there seems every reason to suspect that it may be even more persistent than bony structural characters; while as to the persistence of these last in birds, one has only to examine the series of fossil Limicolæ in the British Museum Collection to be deeply impressed—characters, for instance, may still be reproduced in the head of a humerus of, let us say, an Eroliine or Tringine form of the present day which are, in the most minute degree, comparable to those of a like form as far back as the Miocene (say three or four million years ago). The characters, for instance, which differentiate the humerus of a fossil Miocene Plover from a Miocene Gull are amazingly similar to those of present-day forms.

If, then, we may presume, as I think we are entitled, that the colour-pattern characteristic of the "Golden-Plover Association" is older than the Pleistocene, it might well be asked where were situated the Miocene or Pliocene Tundras to fix such a colour-pattern (by the usually accepted means of natural selection and the survival of the fittest): for a study of the fossil Tertiary flora in circumpolar and arctic regions does not suggest tundral conditions: and we know that all through the Tertiary, Europe, at any rate, enjoyed a mild and at first even a tropical or a subtropical climate.

* Ibis, 1914, pp. 399–403; 1915, pp. 320–346.

Such reflections give pause for thought, and we have to seriously ask ourselves if the origin of characters such as colour-pattern (or indeed any characters) can be explained by a blind appeal to the old formulæ.

* * * * *

To turn, however, from speculation, we find that although a single and striking form of colour-pattern (too well known to require noting here) is characteristic of the "Golden Plover group" regarded as a whole, this group in reality consists of two subgroups which have been distinguished by generic rank; that is to say, the Grey Plover has been relegated to the genus *Squatarola* and the Golden Plover to the genus *Pluvialis*.

The only reason which has been advanced by systematists for the recognition of the genus *Squatarola* is, so far as I am aware, the presence of a rudimentary hind-toe; while the author of the anatomical notes in 'The British Bird Book' has definitely stated in a footnote on page 573 that it is impossible to recognise such a genus at all. In reality, some rather remarkable anatomical characters, apparently hitherto overlooked, seem to fully justify the generic separation of the Grey from the Golden Plover. I am not immediately concerned, however, with the justification of either one or the other genus, but rather with the problem of the significance of the somewhat remarkable deep-seated differences which characterise the two groups.

These differences may be described as follows:—

In the first place, only two cervico-dorsal vertebræ with two free ribs are present in *Squatarola*, while in *Pluvialis* there are three. Here, at once, we find a meristic phenomenon which is difficult to explain by any appeal to the influence of either function or environment.

Turning to the skull we find:—

(*a*) That the lacrymals in *Squatarola* are strikingly different, being prominent out-jutting processes, almost Larine or Tringine in appearance; while in *Pluvialis* their outer margin is rounded and merged into the line of the orbital

rim, being continued forwards and inwards in a smooth and somewhat noticeable convexity in a manner somewhat reminiscent of *Vanellus* (text-figs. 10 *b* & 11 *b*).

(*b*) The interorbital space presents very distinct differences in the two forms. In *Squatarola* it is narrower both actually and relatively, while the raised corniced and everted orbital rim so characteristic of *Pluvialis* is not present; moreover, the grooves for the supra-orbital glands are not nearly so deep or defined as in *Pluvialis*, and the general arrangement here is Larine or Tringine (text-figs. 10 *b* & 11 *b*). In *Squatarola* there are no anterior foramina caudad of the lacrymals. They are well marked in *Pluvialis*, and this seems to be a Charadriine character. In *Squatarola* the inner margins of the grooves for the supra-orbital glands meet in the middle line of the vertex, forming a prominent sagittal ridge down the centre. In *Pluvialis* there is a fairly broad and clearly-marked smooth median depression down the centre of the interorbital space, which is not encroached upon by the supra-orbital grooves.

(*c*) Turning to the palatal plates, we find in *Squatarola* that the postero-external angle is rounded off (in some specimens much cut away). In *Pluvialis* the angle is squarer.

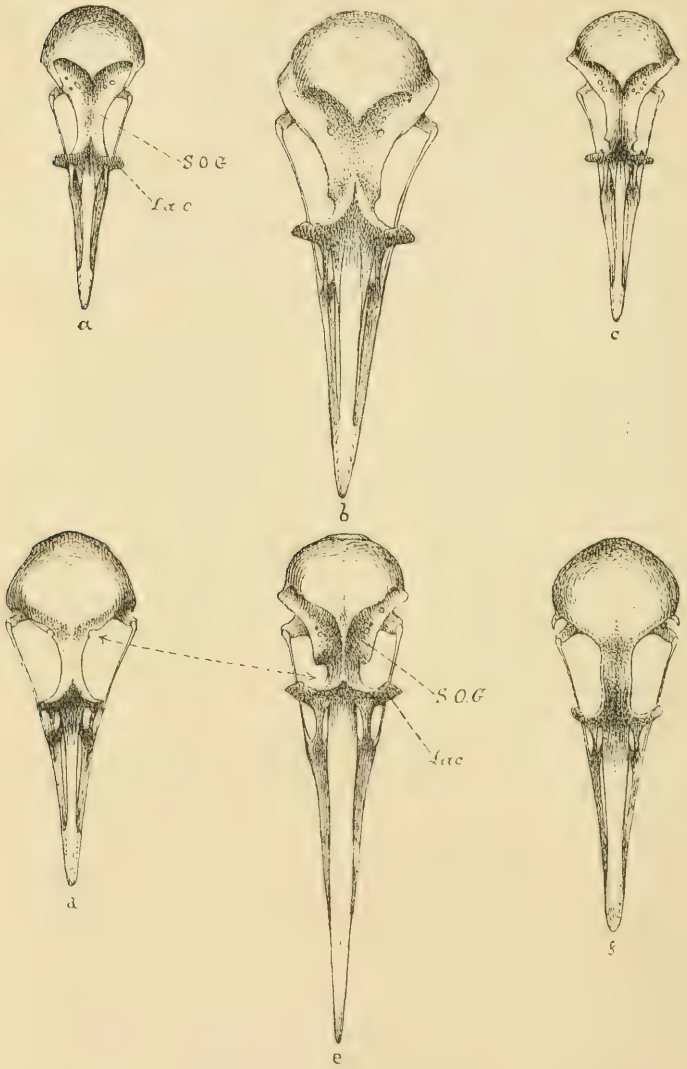
(*d*) In *Squatarola* the ectethmoid or antorbital plate is somewhat triangular in form, the extero-inferior angle representing the apex. In *Pluvialis* the antorbital plate has a quadrilateral form *.

(*e*) In *Squatarola* the descending process of the lacrymal falls perpendicularly to just touch the apex of the antorbital plate. In *Pluvialis* it runs along the outer margin but does not fuse with it.

(*f*) Turning to a comparison of the maxillo-palatines, we find that in the two forms under discussion these are not identical. In *Squatarola* they appear to be more closely applied to the pre-palatals, their posterior or free points being little separated from the palatal plate. In *Pluvialis*

* This, at any rate, is evident in perfectly ossified examples.

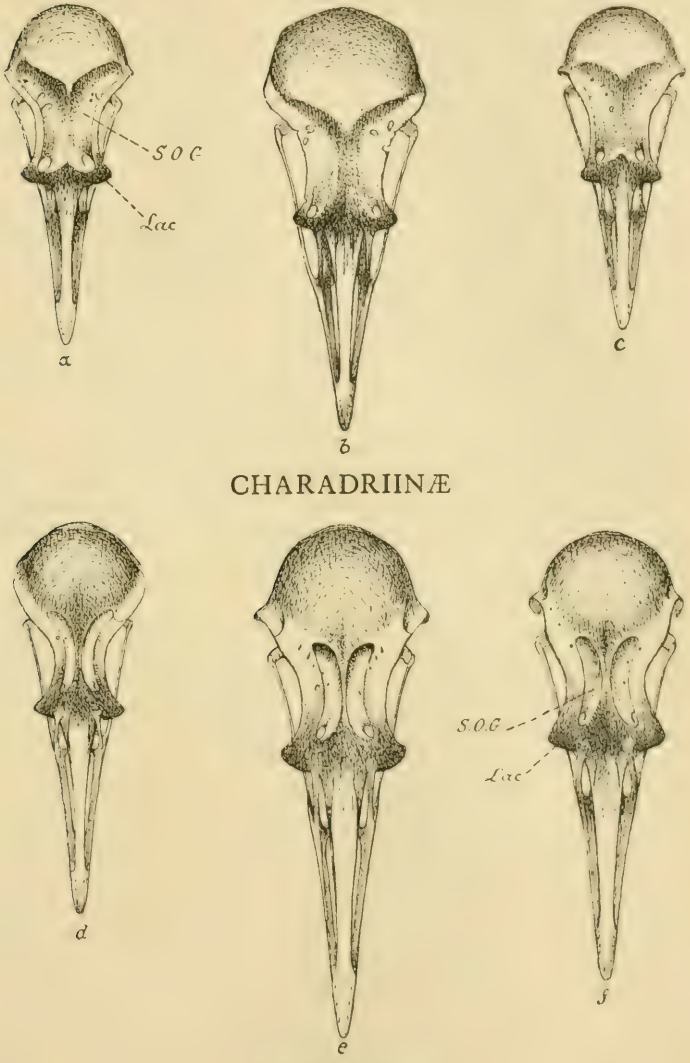
Text-figure 10.



PRE-CHARADRIINÆ

Skulls of Pre-Charadriinæ.—*a*. Leucopolius ruficapillus; *b*. Squatarola squatarola; *c*. Leucopolius alexandrinus; *d*. Arenaria interpres; *e*. Hæmatopus ostralegus; *f*. Aphriza virgata. *S.O.G.* = Supra-orbital groove. *Lac.* = Lacrymal bone. All figures nat. size, except *e* which is two-thirds nat. size.

Text-figure 11.



Skulls of Charadriinæ and Vanellinæ.—*a*. Charadrius cucullatus; *b*. Pluvialis pluvialis; *c*. Charadrius hiaticula; *d*. Eudromias morinellus; *e*. Chettusia leucura; *f*. Vanellus vanellus. *S.O.G.* = Supra-orbital groove. *Lac.* = Lacrymal bone. All figures nat. size.

the free ends converge towards the middle line and underlie the vomer, so that that part of the vomerine process is hidden when these structures are viewed from the palatal aspect. The maxillo-palatines in *Pluvialis* are also more shell-like concavo-convex structures (or more scroll-like). The attachment to the palatal process of the premaxilla is less extensive than in *Squatarola*.

(*g*) In *Squatarola* I have noticed that the dentary margin of the premaxilla is not completely fused with the corresponding portion of the maxillo-palatine as it is in *Pluvialis*. This is a Larine as opposed to Pluvialine character.

(*h*) In *Squatarola* the postero-external angles of the basi-temporal plate end in two fairly conspicuous downwardly projecting processes of bone. These processes are but little evident in *Pluvialis*, but are quite characteristic of the Laridæ and Sternidæ. If well-prepared skeletons of the skulls of the two genera under discussion are compared, these differences are generally apparent. A similar distinction is noted between *Larus* and *Stercorarius*.

It is obvious, then, that even if we confine ourselves to characters noted in the skull, there are somewhat surprising anatomical differences in the two forms under discussion, especially if those differences are regarded from a generic point of view, and it is remembered that the leading or outstanding generic character which has been hitherto held to distinguish *Squatarola* from *Pluvialis* is the abortive hind-toe. It may well be that a good many of the characters referred to above are proportional characters, but it will be noted that they are proportional characters characteristic of various Limicoline groups, and in this respect *Squatarola* seems to present a complex of unit characters of a more mixed nature than *Pluvialis*, a complex now reminiscent of a purely Vanelline type, now Larine or Tringine or now Charadriine; so that we might apparently be justified in hazarding the opinion that *Squatarola* was an older or more generalised type which we might call Pluvialine or Pre-Charadriine; but to this point I shall return.

* * * * *

In the meanwhile it is a very noteworthy and I think highly interesting fact, that we apparently find an almost precisely similar condition of things in another adjacent group of Plovers. I refer to the "Ringed-Plover Association." By this association I mean a certain restricted group of the old heterogeneous collection comprised under the genus *Ægialitis* (olim). This restricted group of Ringed Plovers may be divided into two subgroups to which the generic names *Charadrius* and *Leucopolius* have been applied. While by no means generally recognized, each of these genera has been characterised by well-marked superficial characters connected with the form of the bill, legs, and feet *.

In the genus *Charadrius* may be included such forms as :

Charadrius hiaticula,
„ *dubius*,
„ *placidus*,
„ *melodus*,
„ *semipalmatus*,

with two rather aberrant or specialised forms, *C. cucullatus* and *C. bicinctus*.

In the genus *Leucopolius* we may include :

Leucopolius alexandrinus,
„ *nivosus*,
„ *peroni*,
„ *ruficapillus*,
„ *marginatus*,
„ *collaris*,
„ *venustus*.

Now, just as in the case of *Squatarola* and *Pluvialis*, both the two genera, *Charadrius* and *Leucopolius*, are, as regards adult examples of the various species, linked together by possessing a similar well-marked colour-pattern, too well

* From an examination of skins, Messrs. Mathews and Iredale have insisted on these generic differences, and osteological characters prove them to have been thoroughly justified.

known to need description here but thoroughly characteristic of the "Ringed Plovers," although in *Leucopolius* the colour-pattern is, so to speak, adumbrated—a point to be further noted (*cf.* Plate VI.)

As regards osteological features, we find a similar state of affairs as we did in the "Golden-Plover Association"; that is to say, the skulls of all the species of *Leucopolius* examined* present features exactly reminiscent, if not identical, with *Squatarola*, while those of *Charadrius* resemble *Pluvialis* (*cf.* figures).

This is all the more remarkable when we consider the very great distances which separate the various species in either group. Thus in *Leucopolius* we find *L. alexandrinus* breeding in Europe and Asia, *L. nivosus* in America, and *L. ruficapillus* in Australia; while as regards *Charadrius* we find in the case of *C. hiaticula* (Europe and America), *C. placidus* (China and Japan), *C. semipalmatus* (America), and *C. monachus* (Australia) equally astonishing distances separating the various forms.

In the case of the colour-pattern characteristic of the downy nestlings of the two groups, there is not only a quite obvious generic difference, but in each of the two genera there is an equally striking similarity between individual species no matter what the distance may be separating them; for instance, the coloration and the colour-pattern of the downy nestlings of *L. alexandrinus* (Europe), *L. nivosus* (America), and *L. ruficapillus* (Australia) are so precisely identical that, if the nestlings were inadvertently mixed, it would be all but, if not actually, impossible to separate them, and the same applies to the genus *Charadrius* (*cf.* Pl. VI.)

* * * * *

Such, then, are the series of characters which we may observe to differentiate either of the two subgroups or genera into which the "Golden-Plover" and the "Ringed-Plover" associations may be divided—subgroups, it may again be noted, which in each case are obviously linked by phylogenetic characters, such as colour-pattern and anatomical

* See further on, p. 489.

similarities, into a larger whole, and as obviously differentiated into their respective genera.

It has been suggested that the anatomical differences which I have observed between the genera *Squatarola* and *Pluvialis*, as also between *Leucopolius* and *Charadrius*, are merely the result of differences of function and habits; in reply to which we can only put the question—Are the habits and functions of the Grey and Golden Plovers or of the Kentish and Common Ringed Plovers so different that such striking cranial differences as we have depicted could conceivably have been produced, or was the environment of the Grey and Golden Plovers or of the Kentish and Common Ringed Plovers so different that it could possibly have called forth such anatomical differences in response to it?

If the suggestion is correct *, it is a very remarkable and astonishing fact that the habits and functions of the Grey Plover of the Tundras, the Kentish Plover of Europe, and the Red-necked Plover of Australia are so precisely alike that exactly similar cranial characters have in each case been separately evolved in response to them in the three forms, to say nothing about environment which presumably ought to be similar too, in order to support the argument.

The fact, too, that on the one hand the nestling Kentish Plover (*L. alexandrinus*) of Europe, the Snowy Plover (*L. nivosus*) of America, and the Red-necked Plover (*L. ruficapillus*) of Australia are so precisely alike, *inter se*, that one can only with difficulty be differentiated from the other, while on the other hand they are obviously differentiated from the nestlings of the Common Ringed Plover group (*C. hiaticula, dubius, semipalmatus, placidus*, &c.), which in turn are as like to one another as two rows of peas, seems to me to suggest phyletic rather than environmental influences (*cf.* Pl. VI.).

* * * * *

What, then, is the explanation of these facts?

Any attempt at an answer must necessarily be speculative and suggestive; and my suggestion is that in either of the

* But see further on, pp. 488, 489.

two pairs of groups or genera whose differences *inter se* I have attempted to sketch we have depicted the early and late phases of a species, or a group of species, as evolved in TIME as opposed to SPACE. In other words, the Grey Plover group and the Kentish Plover group respectively belong to an earlier geologic horizon than the Golden Plover or the Common Ringed Plover group. In each of the four groups we have "varieties," subspecies, or species which may be regarded as more superficial present-day variations in relation to space; while on the other hand in each of the four groups we may observe deeper-seated structural characters which represent variations or mutations in relation to time.

Without, I venture to think, too great a strain on the imagination, these mutations in time, although not exactly comparable to the mutation of Waagen *, are suggestively similar; while the Grey and Golden Plover groups taken as a whole, or the Kentish Plover and Ringed Plover groups similarly regarded, may be compared in some sort to the phylum of modern Palæontology.

It is at least suggestive that in what I have termed in the case of either group "the early phase" we find osteological characters which are more generalised, or at any rate less specialised, than is the case in the later phase. It is obvious, for instance, that the six generalised Pluvialine forms figured under the title of Pre-Charadriine (p. 480) have a remarkable morphological likeness to Tringine or Larine † forms; while those figured as examples of the Charadriinæ would appear to be more specialised and more recent Pluvialine forms. Moreover, as I have previously noted above, in the colour-pattern characteristic of the species of all the Kentish Plover group (Plate VI. figs. 1–3) we seem to have an adumbration, or what may be (possibly somewhat

* Waagen, W. "Die Formenreihe des Ammonites subradiatus." Geognostisch-Palaeontologisch Beiträge, Band ii. Heft ii. Nov. 1869, pp. 179–256. For a translation of his principles, *cf.* H. F. Osborn, "Origin of Single Characters as observed in Fossil and Living Animals and Plants," Amer. Nat. vol. xlix. No. 580, April 1915, p. 223.

† For a figure of the skull of *Larus canus* see Ibis, 1916, p. 326.

fancifully) compared to an artist's rough study or preliminary sketch, of the more firmly painted-in colour-pattern characteristic of the Common Ringed Plover group (*cf.* Plate VI. figs. 4–6).

These adumbrations or "studies" of colour-pattern I have often observed in other groups or phyla throughout the whole class of birds. To my fancy they have appeared to be "first attempts" on the part of Nature to produce the more completed sketch; and I think that there is ground for regarding the species of any group with these "adumbrated studies" of colour-pattern as being earlier in point of time of origin than those with more definitely completed colour-patterns. Moreover, such adumbrations of colour-pattern may be found in one part of the area of distribution of a group of species, while the more complete sketch may be found in another.

It will doubtless be answered that these faintly outlined "studies" are merely the result of environment caused, for example, by excess of light and aridity, or what not, in more barren or desert surroundings; but it might, I think, be just as reasonably argued that if a group or phylum of species belonging to an earlier geologic horizon and characterised by such a faintly marked colour-pattern sketch did not unconsciously seek an environment adapted to suit its case, it would be less likely to survive. In the case of the Kentish Plover group this presumably has been done in Europe, America, and Australia, and as a consequence they have survived.

But, it may be said, if we have a *Squatarola-Pluvialis* and a *Leucopolius-Charadrius* group, each composed of subgroups representative on the one hand of a more recent and on the other of an earlier geological horizon, the earlier forms (*Squatarola* and *Leucopolius*) must be regarded as virtual "living fossils," and this, I think, we may take for granted; for of all classes Birds are the most amazingly persistent. In the case of Mammals, forms characteristic of past geologic horizons are for the most part extinct and fossilized. In the case of Birds it is open to doubt if we ornithologists sufficiently reflect what a number of living

forms still exist which are to all intents and purposes "living fossils" and belong to much earlier horizons than the present or indeed the Pleistocene or even much earlier periods.

As to the astonishing and remarkable persistence of birds, it may be worth while to record some remarks made by Shufeldt* upon the fossil *Palæotringa littoralis* of Marsh, a Charadriiform type found as far back as the Cretaceous (Hornerstown, New Jersey). "In my opinion, this tibiotarsus belonged to the skeleton of a medium-sized Gull and not to any Wader. Such characters as it presents in its imperfect condition are distinctly larine, and typically larine at that." Granting that this is correct, and allowing that Gulls are specialised offshoots of the Limicolæ, we can justly infer that Waders as Waders existed at least as far back as the Cretaceous.

I have myself examined examples of Tringine forms from the Middle Miocene which cannot be distinguished from the present-day Wood-Sandpiper; while fossil "Gulls" in the Lower Miocene from Allier in France in the British Museum collection present characters diagnostic of Terns and Limicolæ of the present day in the most minute and faithful degree. We need not be surprised, therefore, that while the mammalian Palæontologist has to look for his facts as regards mammalian history of the past in the fossils of various geologic horizons, the Ornithologist may by taking thought find the past history of Birds written to a great extent in the surviving forms of the present—indeed, since avian fossils are such a comparative rarity, it is self-evident that this is the only course open to him.

* * * * *

In connection with the remarks on page 485 on the subject of morphology and function or habit, it is doubtless true that such anatomical features as the morphology of the supra-orbital grooves for the nasal glands, and the presence or

* "Fossil Birds in the Marsh Collection of Yale University." Trans. Connecticut Acad. Arts and Sci. vol. xix. Feb. 1915, p. 23.

absence of an anterior foramen leading to the nasal region had their primal origin in function or habit. Is there a single known morphological structure which has not the same origin, even such deep-lying ones as the vomer, palate, maxillo-palatine, or pterygoids, selected by Huxley for his system of avian classification? But when (to take one of the characters already noticed in the text) we find a certain type of nasal gland and a certain method of lubricating the Schneiderian membrane characteristic of a Wader-form like *Pluvialis apricarius* and an exactly similar arrangement in another form like *Charadrius hiaticula* or in forms like *Pluvianorhynchus obscurus*, *Nesocerya bicinctus* or *Charadrius cucullatus* (see text-figs. 10 & 11), it seems more reasonable to suppose that such precisely similar structures and physiological adaptations were inherited from some common ancestor rather than that they were separately acquired, in each case, as the result of exactly similar functional strains or habits acting independently. If this is so, such characters can, if selected with judgment, surely be regarded as evidence of affinity and utilized for the purpose of classification?

Provisional Classification of the Charadriidæ.

I am inclined, at any rate, to use these characters provisionally, along with others, in an attempt to classify the Charadriidæ. Working with the somewhat meagre material at present available, there are good reasons which lead one to think that the following genera might be grouped under a heading which I propose to term the Pre-Charadriinæ, that is Pluvialine forms in which the lacrymals are free, and present conspicuous outwardly projecting processes very similar to what is seen in the Laridæ, and in which the foramen for the passage of the nasal duct is absent, its place being taken by a groove situated laterad of the anterior extremity of the frontals, an arrangement also characteristic of the Laridæ. To this group belong the following:—*Leucopolius* (*alexandrinus*; *occidentalis*; *ruficapillus*; *marginatus*; *pecuarius*; *sanctæ-helenæ*; *collaris*; *falklandicus*): *Squatarola*:

Aphriza: *Hæmatopus*: *Pagolla* (*wilsonius*): *Zonibyx* (*modestus*): *Eupoda* (*asiatica*): *Arenaria*.

Following the Pre-Charadriinæ would come the Charadriinæ, that is, Pluvialine forms in which the lacrymals are not free but are merged in the supra-orbital rim, in which there is a conspicuous foramen for the nasal duct immediately caudad of the nasals, in which the supra-orbital grooves are deeply sculptured, often perforated with foramina, and extend well back to the anterior margin of the parietals, and in which the supra-orbital rim is conspicuously raised, everted, or corniced. In this group are included:—*Charadrius* (*hiaticula*; *dubius*; *semipalmatus*; *placidus*; *melodus*; *cucullatus*): *Pluvialis*: *Cirrepidesmus* (*mongolus*): *Nesoceryx* (*bicinctus*): *Pagoa* (*leschenaulti*): *Afroxyechus* (*tricollaris*).

Under another subfamily, for which I propose the name Vanellinæ, we find the subjoined genera. The Vanellinæ may be defined as follows:—Pluvialine forms in which the lacrymals are not free but are merged in the even and rounded contours of the supra-orbital rim, which is not conspicuously raised, everted, or corniced (sometimes somewhat deepened), and in which the depressions for the nasal glands form two more or less short, simple (not sculptured or perforated), shallow, and more or less parallel grooves, with a single foramen at the anterior extremity. This group includes:—*Vanellus*: *Chettusia* (*gregaria*): *Eulyas* (*leucura*): *Eudromias* (*morinellus*): *Podasocys* (*montanus*): *Oxyechus* (*vociferus*): *Eupoda* (*vereda*): *Himantopus* (3 species): *Stephanibyx* (*inornatus*): *Ptiloscelis* (*resplendens*): *Hoploxypterus* (*cayanus*): *Belonopterus* (*cayennensis*): *Defilippia* (*crassirostris*): *Xiphidiopterus* (*albiceps*): *Tylibyx* (*melanocephalus*): *Microsarcops* (*cinereus*): *Lobivanellus* (*indicus*): *Lobipluvia* (*malabarica*): *Oreophilus* (*ruficollis*).

So far as can be gathered from a study of the skulls of the Vanelline genera, all are so remarkably alike that it would even seem impossible to find characters with which to extricate a Dotterel group.

The three Vanelline forms figured on page 481 represent a very accurate sample of this similarity throughout the subfamily. I might also state here that no genus is mentioned throughout this paper, an example of which has not been studied osteologically.

Finally, we have the Lobivanellinæ, which I define as Pluvialine forms similar to the Vanellinæ but with occipital fontanelles absent. In this subfamily would be included :— *Hoplopterus* (*spinosus*) : *Lobibyx* (*lobatus*) : *Zonifer* (*tricolor*) : and *Afribyx* (*senegallus*).

It may eventually be found that several of the forms towards the latter end of the Vanelline list will have to be transferred to the Lobivanelline, as their skulls were incomplete in the occipital region, rendering it impossible to be certain if the occipital fontanelles were absent or present. My impression is that the Lobivanellinæ, as above defined, will be found to be confined to the Old World. At any rate, *Hoploxypterus cayanus*, *Oreophilus ruficollis*, and *Ptiloscelis resplendens* (New World forms) are definitely *not* Lobivanelline (*cf.* Sharpe, Cat. Birds Brit. Mus. vol. xxiv.). In any case I do not attach very much importance to this subfamily, and since this paper has been passing through the press I am inclined to regard it as a specialised offshoot from the Vanellinæ rather than an older branch as originally indicated in the phylogenetic tree (p. 493).

The Jacaninæ and Rhynchæinæ would also be naturally included in the Charadriidæ. They are probably very ancient forms on the Vanelline side of the family (see text-fig. 12). In connection with the remarks already made on morphology and habit, it may be noted that in the Jacaninæ (one of the most aquatic of the Wader groups) the supra-orbital glands are absent.

The characteristic form and arrangement taken by the supra-orbital grooves (depressions for the nasal glands) and foramina (present or absent) for the conduction of the nasal duct leading to the nasal region, as well as of the form of the lacrymals and the general morphology of the inter-orbital region, is well seen in the text-figures on pp. 480, 481,

in which are depicted species, typical in each case of the Pre-Charadriinæ, Charadriinæ, and Vanellinæ.

The relative position and rank of the genera *Aphriza*, *Arenaria*, and *Hæmatopus* have always been a source of difficulty and a stumbling block in attempting a classification of the Charadriidæ. Their inclusion, along with *Leucopolius* and *Squatarola*, in my Pre-Charadriinæ seems not only to be indicated on the score of their general morphological similarity, but their generalised characters would appear to fit in with a Pre-Charadriine picture. There can be no doubt that they are not Scolopacine. On the other hand they are certainly not typical Plovers of the Charadriine or Vanelline group.

In order to more clearly indicate the relative position, constitution, and restrictions of my family Charadriidæ, it may perhaps be advisable to state that, so far as investigations have carried me at present, I regard the order Charadriiformes as dividing into three main branches (see text-fig. 12) or suborders, viz. :—

(1) The Limicolæ = Charadriiformes in which the basipterygoid processes persist in the adult.

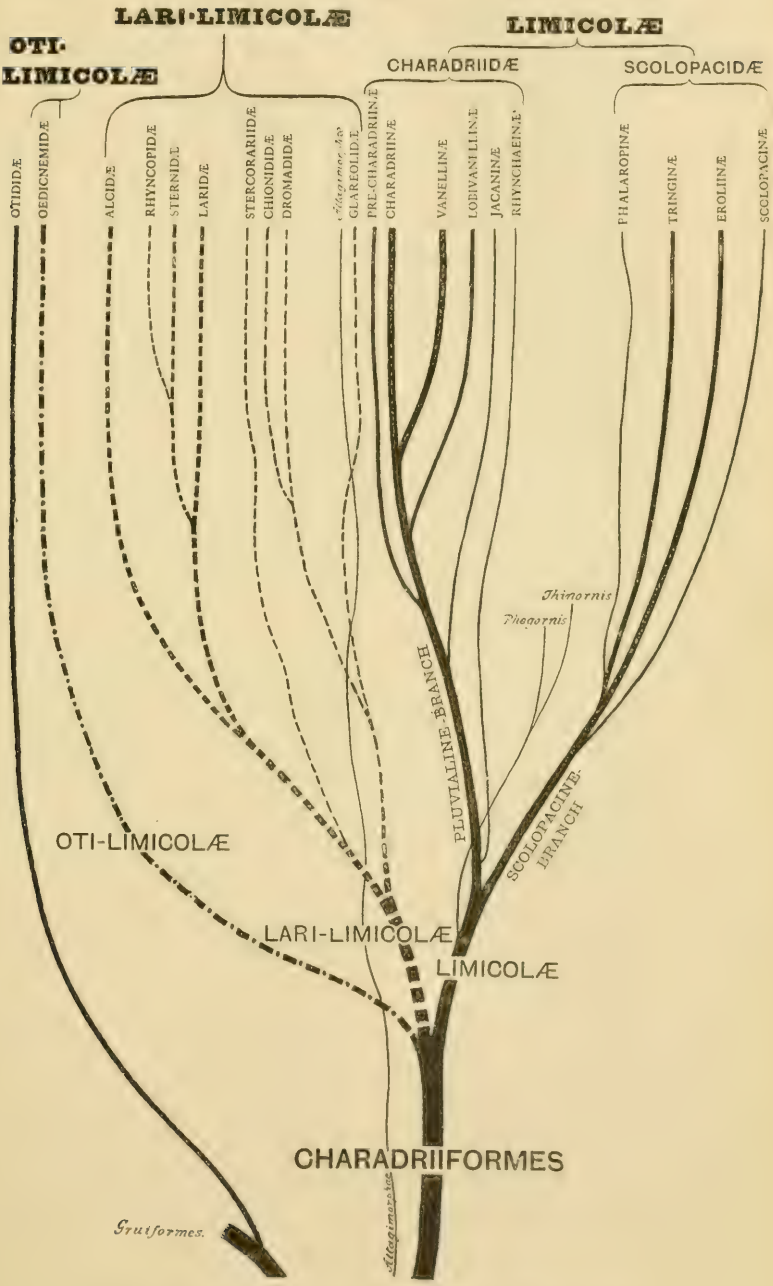
(2) The Laro-Limicolæ = Charadriiformes in which the basipterygoid processes are lost in the adult.

(3) The Oti-Limicolæ (Œdicnemidæ).

(1) Limicolæ.—In the construction of the accompanying genealogical tree (page 493) my Limicoline main branch is represented as dividing into a Pluvialine and a Scolopacine secondary branch.

A. The Pluvialine division again divides into the Charadriinæ and Vanellinæ, while the subfamilies Pre-Charadriinæ, Lobivanellinæ, Jacaninæ, and Rhynchæinæ spring directly from the Pluvialine branch (the Pre-Charadriinæ ranging themselves alongside the Charadriinæ, and the Lobivanellinæ, Jacaninæ, and Rhynchæinæ on the side of the Vanellinæ). All six subfamilies are embraced under the family Charadriidæ.

Text-figure 12.



Hypothetical phylogenetic tree of the Charadriiformes.

B. In like manner the Scolopacine branch divides into four secondary branches—the Phalaropinæ, Tringinæ, Eroliinæ, and Scolopacinæ, the last being represented as springing from the Eroliinæ and the first from near the commencement of the Scolopacinæ, the whole being embraced under the family Scolopacidæ.

(2) The Laro-Limicolæ, the second of my three suborders into which the order Charadriiformes divides, consists of the following families:—Glareolidæ, Chionidæ, and Dromadidæ; the Stercorariidæ, Sternidæ, Rhyncopidæ, and Laridæ; and finally, the Alcidæ. The various branches are depicted in the genealogical tree as being arranged in their probable closeness of affinity to the Charadriidæ or probably, to be more correct, in an ascending order of specialisation away from the Limicolæ, the less specialised modern representatives of the old Charadriiform types being here regarded as represented by the Eroliinæ and Tringinæ.

(3) The Oti-Limicolæ.—As I am awaiting embryological and other material, I have no remarks to offer as yet upon this most difficult group. I have provisionally placed the Œdicnemidæ alongside the Otididæ in such a way as to suggest convergent evolution, but the colour-pattern in the nestling suggests affinity with *Hæmatopus* or a derivation from a common ancestor. Moreover, I am not yet convinced that the Otididæ are gruiform birds, so that it is possible that they may eventually find a permanent resting place in my Oti-Limicolæ.

As regards *Thinornis* and *Phegornis*, I am, while awaiting further material, reluctant to commit myself, but I lean strongly to the opinion that they sprang from the Limicoline stem before that stem had divided into its Pluvialine and Scolopacine branches, and that it may therefore be eventually found impossible to include them in either the Charadriidæ

PYRRHOSPIZA PUNICEA PUNICEA

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or Scolopacidæ. It is conceivable that the primitive Charadriiform types exhibited very similar characters to those of *Thinornis*, *Phegornis*, and certain extinct Pacific forms. It is also very possible that *Rhynchæa* should occupy a similar position in regard to springing from the main Limicoline stem (see alternative position).

As regards the Attagidæ, the ægithognathous type of palate and other very interesting features would seem to warrant the view that they occupy a somewhat similar position in relation to the Charadriiformes that the Hemipodes do to the Galliformes and other groups. If this view is correct, they cannot be included in the Charadriiformes, but would form an annectant group—the Attagi-morphs, equivalent to the Turnico-morphs.

I have been moved to give this provisional and preliminary survey of my present conception of the relations of the Charadriiformes in the hope that by so doing I might possibly interest ornithologists in the collection of material necessary to complete a satisfactory review and classification.

XXIX.—*On the Birds collected by Mr. A. F. R. Wollaston during the First Mt. Everest Expedition.* By N. B. Kinnear, M.B.O.U. *With Notes by* Mr. A. F. R. Wollaston.

(Plate VII.)

Introduction.

The collection of bird-skins brought back by Mr. Wollaston from the Everest Expedition consists of 258 specimens referable to 59 species *.

As pointed out by Mr. Wollaston in his introductory remarks, birds could not be collected everywhere on account of the religious susceptibilities of the Tibetans. In addition

* For a map of the route and localities visited see 'Geographical Journal,' lix. no. 2, Febr. 1922.

to birds he had to make collections in all branches of Zoology and Botany, and at the same time act as Medical Officer to the Expedition.

With the exception of a few freshly-moulted birds obtained in the autumn, all the specimens are in a very worn and faded state of plumage, which renders identification a matter of some difficulty in certain forms.

The collection is of considerable interest, as it is from a district of which we know nothing, though it is possible Hodgson's native collectors may have penetrated near to it in Nepal, but if they had actually hunted on the plains of Tibet surely the Brown Ground-Chough, Tibetan Skylark, or Elwes's Shore-Lark would have been known to Hodgson.

The nearest point on the east where any collections have been made is Khamba Dzong, at which place the Tibet Mission, under Sir Francis Younghusband, spent about two and a half months. Colonel H. J. Walton, I.M.S., the naturalist and medical officer to the Mission, collected assiduously and published the results of his observations on the birds of southern Tibet in 'The Ibis' for 1906. Colonel F. M. Bailey, who was for several years British Trade Agent at Gyantse, made some interesting notes on the breeding-birds in that part, which he published in the 'Journal of the Bombay Natural History Society.' To both these writers constant reference is made, and their notes have been of great service in preparing this paper. Mention must also be made of Blanford's paper on the Zoology of Sikkim in the Journal of the Asiatic Society of Bengal.

On the western side no birds have been observed or collected nearer than the Kumaon–Tibet border, where Dr. T. G. Longstaff shot a few specimens while on a mountain-climbing trip. The higher valleys of Garhwal have been worked, chiefly during the nesting-season, by Messrs. S. L. Whymper and B. B. Osmaston, and their observations recorded in the Bombay Journal. Stoliczka wrote a useful paper on the birds of the Sutlej Valley, Lahoul, and Ladak; and the western border of Tibet has been explored by many travellers and

naturalists, among whom may be mentioned Sir R. Strachey, Dr. A. L. Adams, Lord Gifford, and more recently by Dr. W. L. Abbott, Colonel A. E. Ward, and Mr. F. L. Ludlow.

The occurrence of such species as Prince Henry's Laughing Thrush, Godlewski's Meadow-Bunting, Red-headed Bullfinch, and Himalayan Siskin are of interest, as they show an extension of the previously known range.

Many of the altitudes at which Mr. Wollaston saw or obtained birds surpass all previous records, and those of migrating birds are interesting, since they give additional proof that birds on migration cross high mountain ranges. We already know from the writings of Henderson, Biddulph, and Scully that birds cross the Karakoram Range when migrating from Central Asia to India, but no small Passeres have ever before been observed as high as 20,000 ft., at which altitude Mr. Wollaston saw migrating Pipits and Redstarts on the side of Mt. Everest.

Of the birds seen or obtained by Mr. Wollaston, and not brought back, little can be said, but perhaps it may be of interest to add a few remarks on one or two of them :—

Ibidorhynchus struthersi. The Ibis-bill was first found nesting by Mr. S. L. Whymper in Garhwal at an elevation of 8000 ft. in May 1906, and in the same year Colonel Bailey took a nest near Gyantse at 13,000 ft., while a few years later he found it breeding in the Chumbi Valley.

Milvus melanotis. The Black-eared Kite breeds at Gyantse, and was seen by Bidddulph on the Karakash at over 16,000 ft.

Rostratula capensis. Mr. Wollaston, who is well acquainted with this bird in Africa, tells me that he was quite close to it, and in fact had a shot at it with his ·410 collecting-gun. The Painted Snipe is generally considered a bird of the plains, though, according to Mr. Stuart Baker, it has been found up to 5000 ft. in the Khasia Hills.

Note by Mr. Wollaston.

Owing to a series of misadventures no collecting was possible until 13 June, when I returned from Lachen (Teesta Valley) in Sikkim over the Sepo La into Tibet. A further reason for the somewhat scanty nature of this collection lay in our unwillingness to hurt the religious susceptibilities of the Tibetans. According to the Buddhist belief it is a sin to take life of any sort or kind, so we were careful to avoid shooting in the neighbourhood of villages and monasteries, which meant the exclusion of a very large proportion of the country.

The month of June and the early part of July was spent in typical Tibetan country at altitudes between 14,000 and 16,000 ft.; wide stony plains with very sparse and stunted vegetation, few plants being more than six inches in height; Larks, Mountain-Finches, Ground-Choughs, and Rose-Finches are the most characteristic birds of these wastes. On the rounded limestone hills (16,000–18,000 ft.) rising out of the plains are found the Tibetan Partridge, the Tibetan Snow-Partridge, and in the ravines are the Hill Rock-Dove, Crag-Martin, and Siberian (White-rumped) Swift. At intervals on the plains are wide meres, overflows from rivers, which in the summer are frequented by Bar-headed Geese, Ruddy Shelduck, Garganey, Redshank, Common Tern, Sand-Martin, Sea-Eagle, and Brown-headed Gull. A pair of White Storks was seen on 15 June, and Black-necked Cranes were not uncommon near Tingri. Pochard, Wigeon, and Gadwall were seen in large numbers on the meres in October. Up to the second week of July the weather was almost uninterruptedly fine and rainless; a strong wind, which blew daily from 10 A.M. onwards, raising clouds of dust and sand, interfered somewhat with collecting. Nearly all the specimens collected after 20 June were very much worn in plumage.

Between 10 July and 3 August we visited a quite unknown district south-west and south of Tingri. During this excursion we found ourselves at altitudes as low as 12,000 ft.,

in a country much more Nepalese than Tibetan in character. Birds noticeable in that region were the Himalayan Greenfinch, Indian Tree-Pipit, and White headed Dove. In a valley near Nyenyam at 14,000 ft. I found a pair of Ibis-bills (*Ibidorhynchus struthersi*), which appeared by their behaviour to have young birds on an island in the river; unfortunately the water was too deep and swift to make a crossing possible.

The country in the neighbourhood of Kharta (12,000 ft.), about 25 miles east of Mt. Everest, is partly dry Tibetan and partly wet Nepalese in character. The month of August was spent at Kharta, whence we made excursions south to the Kama Valley, descending to an altitude as low as 9000 ft. In the month of September we ascended the Kharta Valley, making camps at 17,000 ft., where a considerable number of birds were collected, at 20,000 ft., and at 22,400 ft., in the immediate vicinity of Mt. Everest. It is interesting to note that at our 17,000 ft. camp, besides Temminck's Stint, of which a specimen was obtained, the Painted Snipe and Pin-tailed Snipe were both seen, and other migrating birds were heard passing over at night, the cries of Curlews and Godwits being clearly recognisable.

Among the more conspicuous species, of which specimens were not obtained, may be mentioned the following:— Magpie: a pair or two generally to be found near most villages, breeding at Khamba Dzong, June. Raven: very common in all villages, seen up to 21,000 ft. on Mt. Everest. Alpine Chough: common in rocky valleys, seen at 20,000 ft. on Mt. Everest. Himalayan Vulture: in the gorges of the main Himalayan range up to 14,000 ft., not seen on the Tibetan plateau, where its place is taken by the Lammergeier, of which a pair or two may be seen in every district above 14,000 ft. From our camp at 22,400 ft. on Mt. Everest, a Lammergeier was seen flying high over the top of a peak of not less than 24,000 ft. Black-eared Kite: fairly plentiful about villages in Arun Valley: one of these birds frequented our camps in the Kharta Valley up to 17,000 ft., but did not appear to venture farther.

It is greatly to be regretted that the Expedition which is visiting Mt. Everest this year has been forbidden to take firearms of any description.

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List of Species obtained.

Lerwa lerwa (Hodgs.).

325 ♀ 28.8.21 Chog-la 17,000 ft.

The Snow-Partridge is found throughout the higher Himalaya eastwards to China.

[Not seen below 17,000 ft.—A. F. R. W.]

Columba leuconota leuconota Vigors.

284 ♂ 12.8.21 Kharta 12,500 ft.

The Snow-Pigeon occurs throughout the Himalaya up to 15,000 ft. in summer, and sometimes as low as 4000 ft. in winter.

[Inhabits the gorges of the main range up to 12,500 ft., above which altitude and on the Tibetan plain its place is taken by *Columba rupestris*.—A. F. R. W.]

Sterna hirundo tibetana Saunders.

155 ♀ 24.6.21 Tingri 14,000 ft.

The Tibetan race of the Common Tern was reported to be abundant on all streams and lakes visited by the Tibet Mission in 1904. Farther west, Dr. Abbott met with it at the Tso Morari Lake, Ladak, 15,000 ft., in July, and Henderson says it breeds at Gohra at 16,000 ft. Arnold Pike procured two specimens in the beginning of July at Horpa Tso, lat. N. 34° 35′, long. E. 81° 0′, as high as 17,285 ft.

[Generally distributed wherever there are rivers on the plains. Seen fishing at the exit of a river from a glacier at 16,000 ft. north of Mt. Everest.—A. F. R. W.]

Cirrepedesmus mongolicus atrifrons (Wagler).

151 ♂ 23.6.21 Tingri 14,000 ft.

Neither Colonel Walton nor Blanford met with this Plover in Tibet or Sikkim, and little seems to be known of its distribution on the southern limit of its breeding-range. Colonel Bailey found a Plover nesting at Tangla at an elevation of 15,000 ft., which he doubtfully identified with this bird, and in the National Collection there are two skins obtained by Mandelli's native collectors labelled "Tibet 1876." Where exactly Mandelli's men collected, it is impossible to say, but probably near the Sikkim Frontier. Ten miles north-west of Rakas Tal in western Tibet, a little north of the Kumaon border, Dr. T. G. Longstaff procured three specimens (a male, female and downy chick) at 15,000 ft., and on the label of the male he notes "a few pairs found breeding, also probably breeding at Tirthipasi, W. Tibet." Henderson obtained a male at Sagra, Ladak, in August at 16,000 ft., and in the same country A. L. Adams saw old birds and young of what he calls the "rufous-breasted dottrel" (*C. leschenaulti*), but probably this species. Near the Tso Morari Lake M. Babault saw old and young in July. Much farther north, in western Tibet, Arnold Pike met with this Plover in June near Horpa Tso at 17,000 ft.

[Breeding in June on shingly terraces, 15,000–16,000 ft.—A. F. R. W.]

Pisobia temminckii (Leisl.).

357 ♂ 15.9.21 E. Everest 17,000 ft. ; 377 ♂ 21.9.21 E. Everest 17,500 ft.

Temminck's Stint is a common winter visitor to the plains of India, arriving in October or earlier. At Leh, Biddulph met with it in the first week of September, and Scully says it arrives in the Katmandu Valley, Nepal, about the middle of the same month, while in the North-West Frontier Whitehead did not see it till the end of October.

Both Henderson and Stoliczka considered that this Stint bred in Yarkand, where Biddulph shot birds as late as 22 May, but it is sometimes found farther south at even a later date, and M. Babault obtained one on the borders of the Tso Morari Lake on 21 July.

Buturlin, as quoted by Dresser in his 'Eggs of the Birds of Europe,' says "Temminck's Stint does not breed farther south than the south-west part of the Tomsk Government in 51° lat."

[Several seen on migration in September about 17,000 ft. in Kharta Valley.—A. F. R. W.]

Tringa totanus eurhina (Oberholser).

154 ♀ 24.6.21 Tingri 14,000 ft.

This form of Redshank was described by Mr. Oberholser in 1900 from specimens obtained by Dr. Abbott at the Tso Morari Lake, Ladak, 15,000 ft., where it breeds. According to Colonel Bailey, it also nests at Gyantse and in the Chumbi Valley.

[Breeding in June in marshy places everywhere on Tibetan plains.—A. F. R. W.]

Tringa erythropus (Pall.).

139 ♂ 17.6.21 Tingri 13,500 ft.

This unsexed specimen of the Dusky Redshank is a young bird of the previous year in first breeding-plumage. Mr. Wollaston tells me that the bird was brought to him by a young Tibetan boy under cover of night. The boy promised to come back next morning and point out the nest, but he

never returned. Whether this was because he had taken life and was frightened of being found out or because the story was false, Mr. Wollaston was unable to say.

Athene noctua bactriana Blyth.

198 ♂ 5.7.21 Tingri 14,000 ft.

Hutton's Owlet has been recorded up to 15,200 ft. in southern Tibet, and, as Colonel Walton has pointed out, the specimens from that country are rather large. Three males and two unsexed skins from Tibet have wings of 175–185 mm. as compared with 164–167 in four males from Afghanistan and 157–170 in five from Turkestan.

[A pair of these birds had a nest in the old fort at Tingri; their food seemed to consist principally of voles.—A. F. R. W.]

Upupa epops orientalis Stuart Baker.

162 ♀, 163 ♂ 27.6.21 Tingri 14,000 ft.

It seems surprising that a bird of such weak flight as the Hoopoe should be seen at an altitude of 21,000 ft. There are, however, a number of records of this bird at high elevations while on migration, and I give details of some of the highest.

In north-east Sikkim a Hoopoe was seen in the autumn by Blanford at Momay Samdong, 15,000 ft., Stoliczka met with one between 15,000–16,000 ft. in Rupshu, and on the Karakoram Pass Scully records a bird at over 18,000 ft. Henderson, writing of this species, states "In the barest deserts ... the Hoopoe would occasionally be met with," and he adds that he saw one at the top of the Tagalung Pass, 16,000 ft. In his paper on "The Birds of Eastern Turkestan," Biddulph mentions seeing a Hoopoe on Dipsang between 16,371–17,817 ft.

[Common everywhere up to 16,000 ft., nesting in villages and monasteries. A Hoopoe was several times seen flying over a glacier at an altitude of about 21,000 ft. in September.—A. F. R. W.]

Clamator jacobinus jacobinus (Bodd.).

174 ♂ 20.6.21 Tingri 14,000 ft.

The occurrence of the Pied Crested Cuckoo at such an

altitude as 14,000 ft. is very remarkable, since it is generally considered to be a bird of the plains, though Biddulph obtained an example at 5000 ft. in Gilgit in June.

The only other instance I have been able to find of this Cuckoo at a high altitude is in M. Babault's report on the collection of birds he made in the Himalaya, where mention is made of a specimen obtained near Rohla (Rotang), Lahul, at an elevation of 12,000 ft.

[The only specimen obtained was being mobbed by a number of Sparrows, when it was caught by the hand of my Lepcha collector.—A. F. R. W.]

Cyornis tricolor tricolor (Hodgson).

313 ♂ 25.8.21 Kama Valley 12,000 ft.

The correct name of the Slaty-blue Flycatcher is *tricolor* of Hodgson (P. Z. S. 1845, p. 26) and not *leucomelanurus* of the same author.

This bird is found from Kashmir to Sikkim and northern Assam, but some specimens from the two last localities have a rusty tinge on the underside and are intermediate between the true white-bellied *tricolor* and *cerriniventris* Sharpe, in which the underside is rust-coloured. According to the material in the British Museum, *C. tricolor cerriniventris* is found in Manipur—the type comes from Remta in that State.—Mt. Victoria, the N. Chin Hills, and S. Shan States. Specimens from Yunnan and Kansu are intermediate like certain Sikkim birds, and so too are some skins from Sadya, the Miri and Khasia Hills.

Birds from Kashmir and Kumaon appear rather different to typical specimens, and with more material may prove to be a separate race.

Trochalopterum henrici Oustalet.

263 ♀, 264 ♀ Kharta 12,000 ft. ? Bill grey, feet brown.

Prince Henry's Laughing Thrush was described by Oustalet from specimens collected by Prince Henri d'Orleans at So in eastern Tibet, and the only example in the Natural History Museum is a female, obtained by

Colonel F. M. Bailey, in June 1913, at Shako, south-east Tibet. A specimen was obtained by Colonel Waddell at Chaksam in the Tsang Po Valley during the Tibet Mission, and was erroneously described as new by Dresser in the P. Z. S. for 1905, under the name of *Garrulax tibetanus*. This bird appears to be confined to south-east Tibet and the Valley of the Tsang Po, from whence it has probably spread into the upper sources of the Arun River, and Mr. Wollaston's specimens extend the range considerably to the westward. It is rather surprising that *T. affinis affinis* was not met with, since it is found in Nepal, very common in the Chumbi Valley, and Blanford obtained specimens at an elevation of 13,000 ft. in Sikkim.

[Locally in the Arun Valley and its branches, up to 13,000 ft. This bird has a wonderful diversity of song, and is revered as sacred by the Tibetans.—A. F. R. W.]

Troglodytes sp. ?

256 imm. 28.7.21 Puse La 16,500 ft.

Unfortunately the single specimen obtained by Mr. Wollaston is a young bird, and one would hardly be justified in giving it a name, though it is very much darker than *T. nipalensis* of about the same age, and without doubt belongs to an undescribed form.

[Found only in mountainous regions between 16,000 and 18,000 ft., where it lives amongst the large boulders of moraines. It is exceedingly difficult to collect, as the bird when shot is liable to fall into crevices between immovable boulders—of four birds shot, only one (immature) was secured. The song is similar to, but easily recognisable from, that of the Common Wren.—A. F. R. W.]

Cinclus cinclus cashmirensis Gould.

262 imm. 1.8.21 Chulungphu 13,000 ft.; 379 ♂, 380 imm., 381 imm. 11.8.21, 307 ♂ 20.8.21 Kharta 12,000 ft.

In the P. Z. S. for 1859 Gould described two Dippers (*Cinclus cashmirensis* and *C. sordidus*), both of which were obtained by A. L. Adams near the Tso Morari Lake in Ladak.

Dr. Hartert treats *sordidus* as a synonym of *cashmirensis*, considering it merely a dark phase, and *C. younghusbandi* of Walton appears to be the same.

The specimens brought back by Mr. Wollaston tend to confirm the above view, since nos. 379, 380, and 381 were all obtained on the same day, close to one another, and apparently belong to the same brood. The first is a young example of the ordinary *cashmirensis*, the other two are dark like *younghusbandi*.

[Seen near all the fast-running streams from 12,000–17,000 ft.—A. F. R. W.]

Planesticus merula maxima (Seebohm).

261 ♂ 1.8.21 Chulungphu 13,800 ft.; 302 ♂ 18.8.21 Karta 12,500 ft.; 331 ♀ 31.8.21 Karta 12,000 ft.

The type of the Himalayan Blackbird is an immature male collected by Jerdon at Gulmerg in Kashmir in August 1867. The examples of this bird in the National Collection consist of three skins from Kashmir, one from the Kangan Valley, Hazara, one from the Kurram Valley, and a male shot by Colonel Walton at Ganthong in the Chumbi Valley, 12,000 ft. This Blackbird is confined to the Himalaya and Kashmir, and north of the Karakoram Range it is replaced by a smaller form—the Central-Asian Blackbird, *P. m. intermedius*, described by Dr. Richmond from Aksu in Chinese Turkestan. Mr. S. L. Whymper found the Himalayan Blackbird breeding as high as 13,000 ft. in the Nila Valley, Garhwal, and Whitehead mentions that he found nests between 10,000 and 12,000 ft. in the Kurram Valley.

[Found only in the valleys of the main range below 13,800 ft. The song is much harsher than that of the Common Blackbird.—A. F. R. W.]

Monticola solitarius pandoo (Sykes).

309 ♀ 21.8.21 Kharta 12,500 ft.

This form of the Blue Rock-Thrush is found in the breeding-season from Afghanistan and perhaps farther west to China and Tibet. It was not met with by any of the members of

the Tibet Mission. The nest of the Eastern Blue Rock-Thrush has been found as high as 13,500 ft. in Garhwal.

[One pair only seen at Kharta.—A. F. R. W.]

Lioscopus collaris nipalensis (Blyth).

257 juv. 28.7.21 Puse La; 312 ♂ 24.8.21 Kama Valley 14,000 ft.; 337 ♂ 6.9.21 Upper Kharta Valley 17,000 ft.; 350 juv. 16.9.21, 362 ♂, 363 ♀ 17.9.21, 370 ♀ 18.9.21, East Everest 17,000 ft.; 370 ♂ 20.7.21 East Everest 18,500 ft.

Three forms of this Alpine Accentor have been recorded from the Himalaya, as follows:—(1) *L. c. rufiliatus*, breeding in the Safed Koh, Kashmir, and Central Asia, in winter found at Simla and probably other places in the Himalaya; (2) *L. c. whymperi* described from Garhwal; and (3) *L. c. nipalensis*, ranging from Kumaon eastwards till replaced by other races in Yunnan and eastern Tibet.

The status of *L. c. whymperi* is, I consider, very doubtful. It was originally described by Mr. Stuart Baker from three specimens obtained by Mr. S. L. Whymper in Garhwal, and presented by him to the Bombay Natural History Society, and is said to have a rufous wash on the head, neck, and underparts. This rufous colour is, I am certain, not natural, and due to discoloration, probably caused by the preservatives used, since there are in the Bombay collection a number of other skins of Mr. Whymper's with the same stain. It is significant, too, that in the National Collection there is a normally-coloured skin of *nipalensis* obtained by Dr. T. G. Longstaff in Kumaon adjoining Garhwal.

As regards size, the wings of the three skins examined by Mr. Baker ranged from 85 to 92, Dr. Longstaff's bird is 90, and a winter specimen from Simla is 100 mm., while eleven true *nipalensis* from Sikkim vary between 91 and 103, and five of Mr. Wollaston's specimens are also within these last measurements.

Along with the Indian Redstart this bird was obtained at 18,500 ft. on the east of Mt. Everest, the greatest elevation from which any specimens were actually brought back.

A nest of this Accentor was found by Mr. Whymper in the Nila Valley, Garhwal, at 15,000 ft., and in June Dr. Longstaff shot a specimen at the same elevation near Johor, Kumaon, but he does not say whether it was breeding or not.

[Generally distributed on the main range about 15,000 ft. Two of these birds were observed creeping about crevasses of a glacier at an altitude of about 21,000 ft. E. Mt. Everest. —A. F. R. W.]

Prunella fulvescens fulvescens (Severtz.).

233 ♂ 16.7.21, 236 ♂ 15.7.21, Nyenyam 13,500 ft.; 269 ♀ 9.8.21 Kharta 12,000 ft.

According to Colonel Walton this Accentor breeds at Gyantse, but is not found at Juna, just north of the Chumbi Valley, in the winter.

Prunella strophiatus strophiatus (Blyth).

244 ♂, 245 imm. 18.7.21 Nyenyam 14,000 ft.; 255 ♂ 26.7.21 Lepitu Kang 15,500 ft.

The Rufous-breasted Accentor was described by Blyth from Nepal, and during the breeding-season is found from southern Tibet and Sikkim to Garhwal, where Mr. B. B. Osmaston recently recorded it nesting in the Gerthi Valley on the Tibetan border at 13,500 ft. West of that it is replaced by another form, *P. s. jerdoni*, which ranges to Gilgit, but both races are found in the winter in Simla and Kumaon.

Prunella rubeculoides (Moore).

216 ♀ 10.7.21 Tingi 14,000 ft.; 258 ♂ 28.7.21 Puse La 16,500 ft.; 345 ♂ 9.9.21, 360 ♂ 16.9.21 E. Everest 17,000 ft.

This Accentor is widely distributed and extends from Kashmir to Kansu. Colonel Walton says it was common throughout southern Tibet, and in the begining of July Colonel Bailey found it nesting near Dochen at an elevation of 15,500 ft.

Chimarrhornis leucocephalus (Vigors).

293 ♂ 15.8.21 Kharta Valley 12,000 ft.; 329 ♂ 29.8.21 Chog La 15,500 ft.

The White-headed Redstart, according to Colonel Bailey, is very common and nests in the Chumbi Valley at 11,000 ft., but was not observed by the members of the Tibet Mission beyond Phari. On the Lanier Pass in Rupshu Stoliczka saw this Redstart at 17,500 ft.

[Found on the banks of torrents from 9000 to 16,000 ft.; very seldom seen more than a few yards from water.—A. F. R. W.]

Phœnicurus ochruros rufiventris (Vieill.).

252 imm. 13.7.21 Thungla 15,000 ft.; 240 ♀ 17.7.21 Nyenyam 13,000 ft.; 272 imm. 11.8.21, 291 ♂ 15.8.21, 292 ♀ 15.8.21, 308 ♂ 20.5.21, 311 ♂ 20.8.21, Kharta 12,500 ft.; 327 imm. 28.8.21 Khama Valley 15,000 ft.; 334 imm. 4.9.21 Kharta Valley 12,500 ft.; 361 ♂ 16.9.21, 367 ♂ 18.9.21, E. Everest 17,000 ft.; 380 ♂ 23.9.21 E. Everest 18,000 ft.; 382 ♂ 24.9.21 E. Everest 18,500 ft.

Nests near Rham-tso at 14,700 ft. and probably up to 15,000 ft., as skin No. 327 is that of a young bird not long out of the nest.

Blanford noticed this Redstart on migration near Samdong, 15,000 ft., in northern Sikkim in the autumn, but no other observer has recorded it from so high an elevation as Mr. Wollaston.

[Nests and young birds found in several places in June. Large numbers on migration in September up to 20,000 ft., Mt. Everest.—A. F. R. W.]

Phœnicurus erythrogaster grandis (Güld.).

260 ♂ 29.7.21 Kiprak 16,200 ft.; 335 imm. 6.9.21 Upper Kharta Valley 16,000 ft.; 343 ♂ 7.9.21 Upper Kharta Valley 17,200 ft.; 347 ♀ 9.9.21 Everest 17,000 ft.; 350 ♂ 11.9.21, 352 ♂, 365 ♀ 12.9.21, E. Everest 17,500 ft.

I can find no record of Güldenstadt's Afghan Redstart breeding in the Himalaya or Kashmir, and Colonel Walton was unable to say whether it bred in southern Tibet. He shot

specimens during September and October at Khamba Dzong, 15,200 ft., and at Tuna, 15,000 ft., he got one in February, while Blanford says that he never met with it in north-eastern Sikkim in the autumn below 14,000 ft. Henderson saw this Redstart as high as 17,800 ft. in the snow in the Changla Pass, Baltistan, and Scully mentions it as common in August and September on the mountains of Chinese Turkestan at from 10,000 to 18,000 ft.

Saxicola torquata indica (Blyth).

270 imm. 9.8.21, 276 imm. 11.8.21 Kharta 12,000 ft.; 366 ♂ 17.9.21, 378 ♀ 21.9.21, E. Everest 17,000 ft.: 387 ♀ 1.10.21 Kharta 12,000 ft.

Numbers of this Chat were met with by Colonel Walton between Gyantse and Lhasa during the summer, and up to the middle of October it was still to be seen at Khamba Dzong, 15,200 ft. In September and October Blanford saw it, apparently on migration, in the higher parts of Sikkim.

Skin no. 270 is in nesting-plumage, so probably this Chat breeds at Kharta.

[Large numbers were seen, apparently migrating, at and about 17,000 ft., Kharta Valley, in September.—A. F. R. W.]

Œnanthe deserti oreophila (Oberholser).

157 ♂ 25.6.21, 175 ♂ 30.6.21, 195 ♂ 5.7.21, 206, 207 juv. 7.7.21, 217 ♂ 10.7.21, Tingri 14,000 ft.

Breeds at Gyantse at 13,000 ft., but not common farther north. Dr. Abbott found it breeding at Gya, 15,000 ft., and Debring, 16,000 ft., in Kashmir, and Stoliczka obtained examples in the vicinity of Karzag, Rupshu, between 15,000 and 17,000 ft.

Grandala cœlicolor Hodgson.

260 ♂ imm. 29.8,21 Chog La 16,500 ft.

The single example of Hodgson's Grandala shot by Mr. Wollaston is a young male in an interesting stage of plumage. In this bird the blue feathers of the adult are beginning to appear on the rump, wing-coverts, flanks, and

breast. There is a similar skin from Nepal in Hodgson's collection, but unfortunately it is without any date. Oates's suggestion that the young male assumes the blue plumage at the first autumn moult seems doubtful, since Mr. Wollaston's specimen appears to be a bird of the previous year.

Hodgson described this species from Nepal, and it is found from Garhwal to Kansu always at considerable elevations. In Sikkim Blanford first met with it on Momay Samdong at an altitude of 15,000 ft., and later on in the autumn saw a flock near the Donkia Pass about 17,000 ft.

In Garhwal Mr. S. L. Whymper discovered two nests with young in July at 16,700 ft. in the Nila Valley, and in the following year his native collector took two eggs in June at the same place—the first-recorded eggs.

A small flock of these birds were observed by Mr. Osmaston in the early part of June, feeding close to the melting snow in the Tons Valley, at 13,000 ft., but though several of the birds had paired he was unable to find a nest.

This bird has received considerable notoriety in the daily press, owing to its having been reported from time to time as a "Blue-Bird." What the playwriter's "Blue-Bird" was does not concern us here, but it is the name ordinarily used for the North American bird *Sialia sialis*.

[A flock of fifty or more seen on Chog La between the Kharta and Kama Valleys.—A. F. R. W.]

Tribura thoracica (Blyth).

321 ♂ 26.8.21 Popte La 12,000 ft.

The Spotted Bush-Warbler has been found breeding in Nepal and Sikkim, and is fairly common in parts of Garhwal, according to Mr. Osmaston, frequenting open grassy places in summer up to 12,500 ft. Mr. Whymper took nests in the Nila Valley of the same district at 12,000 ft.

Phylloscopus affinis (Tickell).

285 ♂, 239 ♀ 15.7.21, 241 ♀ 17.7.21, Nyenyam 13,500 ft.; 275 ♀ 11.8.21, 356 ♀ 19.8.21 Kharta 12,500 ft.

Tickell's Warbler is found during the breeding-season from

Kashmir to Kansu, and, according to Colonel Walton, "is by far the most common Leaf-Warbler in S. Tibet," remaining as late as the second week of October at Khamba Jong, 15,200 ft. In September Stoliczka obtained specimens at Chagra, Ladak, 15,564 ft. Colonel Bailey took nests at Gyantse, 13,500 ft., and in Garhwal Mr. Osmaston has recorded that it breeds in considerable numbers at the same elevation, while in Ladak Colonel Ward found it nesting up to 14,000 ft.

? **Phylloscopus inornatus inornatus** Blyth.

322 ♂ 26.8.21 Popti La 12,000 ft.

This single skin is in a very worn condition, and it is impossible to say whether it belongs to the above form or *P. i. mandelli*.

Phylloscopus fuligiventer (Hodgson).

314 ♀ 24.8.21 Kama Valley 12,000 ft.

The specimens of the Smoky Willow-Warbler in the Natural History Museum are from Nepal and Sikkim during the breeding-season, and the Naga Hills, Sadiya, and Buxa Duars in the winter. This Warbler was obtained by Blanford near Momay Samdong in northern Sikkim in rhododendron-scrub at an elevation of about 14,000 ft.

Lanius schach tephronotus Vigors.

272 ♂ 10.8.21, 296 ♂, 297 ♀, 298 imm. 17.8.21, 363 imm. 18.8.21 Kharta 12,500 ft.

The Grey-backed Shrike was reported by Colonel Walton to be very common at Gyantse, in the valley of the Tsang Po, and at Lhasa, and Colonel Bailey found it nesting near Kangmar, south Tibet, at 14,000 ft.

An immature example of this Shrike, shot by Colonel Waddell near Chaksam on the Tsang Po, was described by Dresser in the P. Z. S. for 1905 as a new species under the name of *Lanius lhama*.

[Found in the Arun and similar valleys below 13,000 ft.—A. F. R. W.]

Pariparus rufonuchalis beavani (Jerdon).

323 ♂, 324 ♀ 27.8.21 Kama Valley 12,000 ft.

The Sikkim Black Titmouse is found from Szechuan and Kuku Nor to Nepal, and from Kumaon westwards it is replaced by the typical form *P. r. rufonuchalis*.

In the Chumbi Valley, according to Colonel Walton, this Tit is not uncommon, and Blanford and Mr. Elwes met with it up to 13,000 ft. on the Chola Range, Sikkim.

On an average, birds from Nepal, Sikkim, and south Tibet are larger than those from Yunnan, Szechuan and Kuku Nor; twenty-five specimens from the former localities have wings measuring 66 to 73 mm., average 70·4, while ten from the latter range from 63 to 70 mm. with an average of 66. Unfortunately, the material in the Museum is lacking in properly sexed specimens.

[Only found in Kama Valley, south-east Mt. Everest, in juniper forest from 10,000–13,000 ft.—A. F. R. W.]

Anthus richardi striolatus Blyth.

344 ♂ 3.9.21 Upper Kharta Valley 17,000 ft.; 354 ♂ 12.9.21 East Everest 17,000 ft.; 368 ♂ 18.9.21 East Everest 17,000 ft.; 372 imm. 19.9.21, 374 ♂ 20.9.21, 376 ♀ 21.9.21 East Everest 17,500 ft.; 384 ♂ 26.9.21, 385 ♀ 27.9.21, 386 ♂ 27.9.21, South-east Everest 16,500 ft.

Blyth's Pipit does not breed in the Himalaya, though nests have been found in the Khasia Hills, Assam, and some of the Burmese Hills. Small numbers of this Pipit were seen by Colonel Walton at Khambra Dzong in September, and in the same month and also in October Blanford met with it in northern Sikkim at from 7000 to 15,000 ft.

[Seen on migration in Arun and Kharta Valleys in September. Several of these birds frequented our camp at 20,000 ft. East Mt. Everest.—A. F. R. W.]

Anthus roseatus Blyth.

273 10.8.21, 301 ♂ 18.8.21 Kharta 12,500 ft.; 328 ♂ 28.8.21 Kharta Valley 15,000 ft.

In the breeding-season Hodgson's Pipit is found from the

Himalaya northwards, but no one had previously observed it in southern Tibet. In Sikkim and along the Himalaya this Pipit nests at high altitudes, and Mr. Osmaston found it breeding up to 12,500 ft. in Garhwal.

Blanford saw this bird at 15,000 ft. in Sikkim in the autumn.

Anthus hodgsoni Richmond.

246 ♂ 18.7.21 Nyenyam 13,000 ft.; 247 ♀ 8.7.21 Nyenyam 14,000 ft.; 300 ♀ 18.8.21 Kharta 12,500 ft.; 315 ♂ 23.8.21 Kama Valley 10,000 ft.; 375 ♂ 20.9.21 East Everest 17,500 ft.

Dr. Richmond has pointed out that the name *Anthus maculatus* Jerdon is preoccupied, and in future the Indian Tree-Pipit must be known as *Anthus hodgsoni* Richmond.

The breeding-range is from Siberia and China to the Himalaya, where, as a rule, it is found nesting lower down than *A. roseatus*. Colonel Walton obtained specimens both at Lhasa and Khamba Dzong in September, when probably on migration, and in the same month Blanford saw birds passing down the Sikkim valleys.

[Appeared to be breeding in Nyenyam Valley in July. The song is almost indistinguishable from that of the Tree-Pipit.—A. F. R. W.]

Budytes citreola citreola (Pall.).

167 ♀ 28.6.21, 214 ♀ 9.7.21 Tingri 14,000 ft.

Colonel Walton found the Yellow-headed Wagtail a common bird throughout southern Tibet. No. 214, which was shot off the nest, is in the immature grey plumage.

[Occasionally seen in marshy places. Nest with fresh eggs found near Tingri at the beginning of July.—A. F. R. W.]

Motacilla alba leucopsis Gould.

381 ♂ 24.9.21 East Everest 17,500 ft.

This Wagtail breeds in northern Tibet, Mongolia, and Manchuria, and passes through southern Tibet on migration to the plains of India.

Motacilla alboides Hodgson.

191 ♂ 6.7.21 Tingri 14,000 ft.; 251 juv., 252 ♂ 18.7.21 Nyenyam 14,000 ft.; 267 ♂ 8.8.21 Kharta 12,500 ft.

As pointed out by Mr. Oberholser in the Proc. U.S. Nat. Mus. vol. xxii. p. 222, *Motacilla alboides* Hodgson is the correct name for the Wagtail generally known as *M. hodgsoni* Blyth. As a breeding species Hodgson's Pied Wagtail is found from Kashmir along the Himalaya to Tibet.

[Commonly seen along all rivers between 12,000 and 15,000 ft.—A. F. R. W.]

Otocoris alpestris elwesi Blanford.

136 ♂ 18.6.21 Jelepla 15,500 ft.; 138 ♀ 14.6.21 Khamba Dzong 15,000 ft.; 146 ♀ 18.6.21 Chasha 13,500 ft.; 163 ♂, 164 ♂ 27.6.21, 170 ♂ 28.6.21, 178 ♂, 179 ♂, 180 ♀, 182 ♂, 181 ♀ 2.7.21, 185 imm. 3.7.21, 188 ♀, 189 ♂, 190 ♂, 191 ♀ 4.7.21, 212 ♀ 8.7.21 Tingri 14,000 ft.; 342 imm. 6.9.21 Upper Kharta Valley 17,000 ft.; 364 ♀ 20.9.21 Tingri 17,300 ft.

Elwes's Shore-Lark is a common bird of the higher and bleaker parts of Tibet, where it was found breeding by Colonel Bailey near Tangla at 15,200 ft. Mr. Wollaston obtained eggs at Tingri, 14,000 ft., but probably it nests up to at least 17,000 ft., since skin no. 342, which was procured in the Upper Kharta Valley at that elevation, is in nestling-plumage. The type of this Shore-Lark was obtained by Messrs. Elwes and Blanford near the Kangra Lama Pass on the borders of Sikkim and Tibet at between 15,000–16,000 ft., and they also met with it up to 18,000 ft. on the Donkia Pass.

[Common on the plains and seen as high as 17,000 ft., East Mt. Everest. Nests with young were found on 3 June, when snow was still on the ground.—A. F. R. W.]

Melanocorypha maxima Gould.

141 ♂ 17.6.21 Tinki Dzong 13,500 ft.; 200, 201 juv. 6.7.21, 210 ♀ 8.7.21, 211 ♂ 8.7.21, 218 ♀ 11.7.21, 219 ♂ 11.7.21, 220 ♀ 13.7.21, 221 ♂, 222 ♀ 11.7.21 Tinki Dzong 14,000 ft.

The Long-billed Calandra Lark is confined to the country between Kansu and the northern borders of Nepal and Sikkim. Two of Mr. Wollaston's skins, nos. 200 and 201, are in nestling-plumage. This Lark was seen up to 15,200 ft. by Colonel Walton.

[A conspicuous bird on the open plains, 14,000 to 15,000 ft. This Lark is occasionally kept in cages by the Tibetans, who call it the Mocking-bird on account of the great variety of its song.—A. F. R. W.]

Alauda inopinata Bianchi.

136 ♂ 14.6.21 Khamba Dzong 15,000 ft.; 183 ♂, 184 ♀ 3 7.21, 203 ♂ 6.7.21, 208 ♀, 213 ♂ 8.7.21, 220 ♀, 221 ♂, 222 ♀ 11.7.21 Tingri 14,000 ft.

This Skylark appears to be resident in Tibet, and I have been unable to find any record of its occurrence elsewhere. The shape of the wing is different in this bird to that in the *arvensis* group of Larks, and I think for the present it should certainly be kept as a distinct species. In the Natural History Museum there are four skins of *Alauda gulgula guttata* collected by Mandelli's native collectors in Tibet in May and one from Sikkim in June. They are rather more rufous than birds from Kashmir, more the colour of *cultivox*. It would be interesting to know whether this Lark breeds in Sikkim or Tibet.

[Occasionally found about cultivated fields ; the song and habit of soaring very similar to that of a Skylark. A nest with three fresh eggs found at Tingri on 7 July. Nest much more compactly built and better concealed than that of the Skylark.—A. F. R. W.]

Calandrella acutirostris tibetana Brooks.

140 ♀ 17.6.21 Tinki Dzong 13,500 ft. ; 147 ♂ 18.6.21 Chusha 14,000 ft. ; 148, 149 ♂ 19.6.21 Gyanka 13,500 ft. : 152 ♂ 23.6.21, 156 ♂ 25.6.21, 160 juv. 27.6.21, 161 ♀ 27.6.21, 165 ♂ 26.6.21, 171 ♂, 171*a* ♀ 28.6.21, 172 ♀ 26.6.21, 197 ♂ 5.7.21, 209 ♂ 8.7.21, 215 ♀ 9.7.21 with

eggs, 218 ♂ 10.7.21 Tingri 14,000 ft.; 265 juv. 6.8.21, 271 juv. 9.8.21 Kharta 12,000 ft.

The Tibetan Short-toed Lark is one of the commonest breeding-birds in southern Tibet, and has been found nesting up to a height of 15,200 ft. In winter it descends to the plains of India.

[One of the commonest birds on the plains. Nests with fresh eggs, evidently a second laying, were found in July; the nest is very similar to that of a Meadow-Pipit.—A. F. R. W.]

Calandrella brachydactyla dukhunensis (Sykes).

365 ♂ 17.9.21 E. Everest 17,000 ft.

The Rufous Short-toed Lark breeds in central Asia and passes through southern Tibet on migration. Colonel Walton saw and obtained specimens at Khamba Dzong, 15,200 ft., in September and October, in which months Blanford also met with it in Sikkim at 16,000 ft.

Chionospiza nivalis adamsi (Moore).

153 ♀ 24.6.21, 158 ♀ 25.6.21, 159 ♂ 27.6.21, 176 ♀ 30.6.21 Tingri 14,000 ft.; 224, 225 juv. 14.7.21 Thung La 16,000 ft.; 227 ♀, 228 ♂ 14.7.21 Thung La 15,000 ft.; 259 ♀ 31.7.21 Rebu 14,800 ft.

In 1852 A. L. Adams discovered this Snow-Finch near the "Lamestry of Lamayeroo" in Ladak, and six years later it was described by F. Moore in the P. Z. S.

Adams's Mountain-Finch breeds at Phari, 14,500 ft., in June, according to Colonel Bailey, and is common in the winter near Khamba Dzong at 15,200 ft. Farther west in Ladak Colonel Ward found young, which had just left the nest, on the Fortu La Pass at 14,000 ft., and Stoliczka observed it near Taglang in Rupshu between 15,000–16,000 ft.

[Generally distributed between 14,000 ft. and 16,000 ft. Nests with young were found in July in old walls and piles of stones.—A. F. R. W.]

Chionospiza blanfordi (Hume).

186 ♂, 187 ♀ 3.7.21 Tingri 14,000 ft.

Blanford's Mountain-Finch was only found in the autumn and winter near Khamba Dzong and Tuna up to 15,200 ft. In July a few were seen on the Karo La Pass and near Lhasa.

Mandelli's native collectors obtained a number of skins in "Tibet" between March and October.

Arnold Pike shot a specimen east of Mangisa Tso in north-west Tibet in June, and there are other skins in the collection from north Tibet.

[One pair only observed; the nest with young found two feet down the burrow of a Pika (*Ochotona curzoniæ*).—A. F. R. W.]

Fringilauda brandti hæmatopygia (Gould).

226 ♀ Thung La 15,000 ft.; 234 ♀, 235 ♂ 16.7.21 Nyenyam 13,500 ft.; 341 ♂ 6.9.21 Upper Kharta Valley 17,000 ft.; 348 ♂, 249 ♂ 10.9.21 E. Everest 17,500 ft.; 383 ♀ 22.9.21 E. Everest 17,000 ft.

This Finch, described by Gould in the P. Z. S. for 1851, was said to have been obtained by Lord Gifford in Tibet. In the letterpress to plate 3, vol. v., of the 'Birds of Europe,' Gould states that he is "indebted to Lord Gifford for the loan of this fine bird, which is second in interest only to the new and beautiful *Syrrhaptes tibetanus* also brought back by his lordship." The type-locality of the Sand-Grouse is known to be the Tso Morari Lake in Ladak, and I think we are justified in fixing the same place for Gould's Mountain-Finch.

Dr. Hartert (Vög. pal. Faun. p. 137) considers that the birds from Gilgit to Sikkim are all *hæmatopygia*, which race differs from *brandti* in wanting the red on the lesser wing-coverts and in the darker and more streaked upper-side. According to the series in the British Museum, however, the Gilgit birds agree very closely with those from the Pamirs and Tian Shan, and are neither so dark or streaked

as specimens from Ladak, Kulu and Sikkim, while the red on the lesser wing-coverts seems to be variable.

Fringilauda nemoricola nemoricola Hodgson.

242 ♀ Nyenyam 13,000 ft.; 248 ♂, 249 ♂ Nyenyam 13,500 ft.; 250 ♀ 18.7.21 Nyenyam 14,000 ft.; 356 ♂, 357 ♂ 15.9.21 E. Everest 17,000 ft.

Hodgson's Mountain-Finch ranges from Nepal into China, and to the west of the former country it is replaced by *F. n. altaica*, in which the axillaries are pale ashy and not yellow. Only one example of this Finch was obtained during the Tibet mission and no others were seen, but in the higher parts of Sikkim it is a common bird. The allied race *altaica* was shot by Stoliczka up to 15,000 ft. in north Lahul, and Mr. Osmaston found nests at 13,500 ft. in Garhwal.

Acanthis flavirostris rufostriata (Walton).

145 ♂ 18.6.21 Chola 13,500 ft.; 193, 196 ♀ 5.7.21, 204 ♀ 6.7.21, 205 ♀ 7.7.21, 219 ♂ 10.7.21 Tingri 14,000 ft.

Walton's Twite has previously been recorded only from the country between Khamba Dzong and Lhasa, where it is common and resident up to 15,200 ft. Mr. Wollaston informs me that he found it local, and confined to where there were patches of cultivation.

Hypacanthis spinoides (Vigors).

292 ♂, 230 ♀, 243 ♂ 17.7.21 Nyenyam 12,500 ft.

The Himalayan Greenfinch has not been recorded before from higher than 10,000 ft. In winter, according to Mr. Osmaston, it descends to the plains at the foot of the hills.

As in the case of the Red-headed Bullfinch, this bird has extended its range up the wooded Nepal valleys into Tibet.

[Seen only at Nyenyam Valley on the border of Nepal, 12,000 ft.—A. F. R. W.]

Passer rutilans cinnamomeus (Gould).

299 ♂ 18.8.21 Kharta 12,500 ft.; 332 ♂ 31.8.21 Kharta 12,000 ft.

This Tree-Sparrow is found from Chitral to Szechuan, where it meets the typical form *P. rutilans rutilans*, in which the underside is white and not yellow. Colonel Walton records the Cinnamon Tree-Sparrow as a resident and common species between Gyantse and Lhasa, and Colonel Bailey found it breeding at an elevation of 13,000 ft. near the former place, while farther west Stoliczka obtained specimens at Gaora in western Tibet between 12,000 and 15,000 ft.

Dr. Hartert in his Vög. pal. Faun. separates birds from Kashmir and the western Himalaya as *P. rutilans debilis* on account of a difference in colour and smaller size, the wings measuring 70–73 mm. as against 77–79 mm. in *cinnamomeus*.

After carefully comparing the large series in the Museum I can find no constant colour-difference, and, as regards size, thirty-two males from west of Nepal measure 69–74 mm., while twenty from Nepal–Bhutan, including Tibet, have a wing of 72–78 mm. This shows that the Nepal–Bhutan, Tibet, birds are slightly larger; but, on the other hand, twenty-two skins from Assam and Burma measure 68–72 mm. and seven from Yunnan 69–75 mm., so that size is not a very satisfactory character.

Gould specified the type-locality as "apud montes Himalayenses," but Dr. Hartert, without giving any reason, has restricted it to Bhutan, in spite of the fact that the wing of the type was said to measure $2\frac{3}{4}$ ins. = 70 mm., which is the minimum given for the *debilis* race!

[Seen in flocks in barley-fields, Arun Valley, September.—A. F. R. W.]

Passer montana, subsp.?

173 ♂ 30.6.21, 177 ♂ 30.6.21, 194 ♂ 5.7.21 Tingri 14,000 ft.

All the specimens of the Tree-Sparrow are so worn

that I have been unable to decide to what race they belong.

[Common in all Tibetan villages and monasteries visited.—A. F. R. W.]

Carpodacus erythrinus roseatus (Hodgson).

237 ♂ 5.7.21 Nyenyam 13,500 ft.; 333 ♀ 2.9.21 Kharta 12,000 ft.

Hodgson's Rose-Finch replaces the common Rose-Finch in India, wintering throughout the peninsula and retiring to the Himalaya and central Asia to nest. At Khamba Dzong, 15,000 ft., this bird was seen and shot by Colonel Walton during October. At Chaksam and Lhasa he obtained two specimens of what he considered was a new species, naming it *Carpodacus lætissimus*. This bird, which he says occurred sparingly in the country between the Brahmaputra River and Lhasa, appears to be nothing more than a rather brightly-coloured specimen of *C. e. roseatus*.

Hodgson's Rose-Finch nests along the Himalaya, and on the borders of Tibet and Garhwal; Mr. B. B. Osmaston found a considerable number breeding in the Girthi Valley between 13,000 and 13,500 ft., Stoliczka reported it in Lahul in June at 11,000 to 12,000 ft., and Mr. Baker has eggs taken in the Khagan Valley, N.W. Frontier, between 6500 and 8500 ft.

In the spring the male of *C. e. roseatus* may be distinguished from the typical form by its deeper coloration above and brighter tinge below.

[In cultivated lands about 13,000 ft.—A. F. R. W.]

Carpodacus pulcherrimus pulcherrimus (Moore).

266 ♂ 8.8.21, 285 ♂ 13.8.21, 304 ♂ 18.8.21 Kharta Valley 12,500 ft.; 366 ♀ 6.9.21 Kharta Valley 14,800 ft.

The birds obtained by Mr. Wollaston belong to the typical form of the Beautiful Rose-Finch, which ranges from Sikkim to Garhwal. In the Chumbi Valley and southern Tibet it is replaced by *C. p. waltoni* Sharpe, in which the male is a brighter rose-pink on the sides of the head and underparts, while the female is much paler than the female of the typical

form. In Garhwal and Kumaon there is a closely allied species, *ambiguus* of Hume, but I have only been able to examine one male, the type, a carbolized specimen.

Both species breed in Garhwal, where Mr. Whymper found *ambiguus* nesting at 12,000 ft., but he does not say at what elevation *pulcherrimus* was breeding. Mr. Osmaston, who found the latter bird nesting in the Girthi Valley, states that the nests were at an altitude of 13,000 to 13,500 ft.

Carpodacus severtzovi Sharpe.

143 ♂ 18.6.21 Chusa 13,500 ft., 232 ♂ 16.7.21 Nyenyam 12,500 ft.

Sharpe gives the type-locality of this bird as "Turkestan and Yarkand," but nowhere does he designate a type. The first birds mentioned in the 'Catalogue of Birds' are carbolized specimens from the hill country south of Yarkand, and next come several skins from Kashgar presented by Dr. Bellew to the H.E.I. Co. Museum — afterwards transferred to the British Museum,—and one of these, no. 80.1.1.3511, I designate as the type.

As both *C. severtzovi* and *C. rubecilloides* are found in the same locality during the breeding-season, they cannot both be subspecies, as considered by Dr. Hartert.

This bird breeds commonly in southern Tibet, and Colonels Bailey and Steen found nests at 14,000 ft. near Gyantse.

Carpodacus rubecilloides Przew.

142 ♂ 8.6.21 Chusha 13,500 ft.; 231 ♂ 16.7.21 Nyenyam 13,500 ft.; 268 ♀ 9.8.21 Kharta 12,000 ft.; 274 ♂, 286 ♂, 287 ♀ 14.8.21 Kharta 12,500 ft.

Specimens of Przewalski's Rose-Finch were obtained by Colonel Walton up to 15,200 ft. in southern Tibet during December, April, and May, and he states that its distribution coincides with that of *C. severtzovi*.

Dr. W. L. Abbott met with this Rose-Finch in July on the Khardong and Sassu Passes, Ladak, at 16,000 ft., and von Pelzeln mentions that Stoliczka procured it at Parang below the Spiti–Rupshu Pass at 17,000 ft.

Pyrrhospiza punicea punicea Hodgson. (Pl. VII.)

253 ♂, 255 ♀ 25.7.21 Lapchikang 16,800 ft.; 340 ♂, 338, 339 imm. 6.9.21 Upper Kharta Valley 17,300 ft.; 351 imm. 11.9.21, 359 imm. 16.9.21 E. Everest 17,500 ft.; 871 ♂ 18.9.21 E. Everest 17,000 ft.

This fine Rose-Finch frequents the higher ranges of the Himalaya in summer, retiring lower down in winter. It is found in Sikkim, southern Tibet, and Nepal, and in the north-west Himalaya and Kashmir is replaced by a paler bird, *P. p. humii*.

Blanford obtained specimens of the Red-breasted Rose-Finch at 14,000 ft. on the Chola Range, Sikkim; but neither Colonels Walton, Bailey, nor Steen seem to have met with it, though Mr. Stuart Baker says it breeds in the Chumbi Valley.

The western race, *humii*, has been found nesting in the Nila Valley, Garhwal, not far from the Borrendia Pass, by Mr. Whymper, and in 1881 Major C. H. T. Marshall saw a pair of old birds feeding fully-fledged young in the Sauch Pass, Chamba; Stoliczka says this bird is found in Spiti and Ladak from 13,000 to 17,000 ft. in summer.

[A bird of the high mountains, never seen below 16,000 ft. —A. F. R. W.]

Pyrrhula erythrocephala Vigors.

295 (♀) ♂ 17.8.21 Kharta 12,500 ft.; 316 ♂, 217 ♀, 318 ♀, 320 ♀ 25.8.21 Kama Valley 10,000 ft.

The Red-headed Bullfinch is confined to the Himalaya, and the birds obtained by Mr. Wollaston must have spread up the Arun Valley from Nepal.

Mr. S. L. Whymper found this Bullfinch breeding in Garhwal at an elevation of 12,000 ft., but, according to Stoliczka, it sometimes nests near Kotegurh 6000 ft. lower.

[Only found in the pine and juniper forests of Kama and Arun Valleys up to 12,000 ft.—A. F. R. W.]

Emberiza cia godlewskii Tacz.

279 ♂ 11.8.21, 282 ♂, 283 ♂ 12.8.21, 289 ♀, 290 ♂

14.8.21, 294 ♂ 15.8.21, 305 ♂ 9.8.21, 301 ♀ 21.8.21 Kharta 12,500 ft.

Godlewski's Meadow-Bunting is found from northern China and Mongolia to Chinese Turkestan, where Biddulph obtained several specimens in the Kirog Valley and Dr. Abbott met with it at the Tangitan defile. It has not previously been recorded from southern Tibet, though Colonel Walton saw a Bunting in Lhasa with a streaked head, which may have been this species.

The birds seen by Mr. Wollaston must have come from farther north, and possibly they pass the winter in some of the lower valleys adjoining the Nepal border.

[Many observed migrating through Arun Valley in August and September.—A. F. R. W.]

Pyrrhocorax pyrrhocorax (Linn.).

150 ♂ 26.6.21 Kishong 13,500 ft.

The Common Chough of the Himalaya was described by Gould, on account of its large size, as a new species under the name *Fregilus himalayanus*. The type, which was formerly in the H.E.I. Co. Museum, was collected by Strachey in Kumaon, and has a wing measuring 321 mm.

In trying to decide whether this is a good race or not, I have measured most of the birds in the British Museum, and the result shows that no satisfactory division can be made. With better material—few of the Museum birds are sexed—this may not, however, be the case :—

	No. of specimens.	Range. mm.	Average. mm.
British Isles *	12	260–293	270
Europe	10	254–305	280
Canary Is.	4	258–280	269
Africa *	12	275–310	287
Asia Minor–Persia	11	280–318	301
Afghanistan–Baluchistan	8	267–316	286
Kashmir–Kumaon	33	290–336	310
Sikkim–Bhutan	31	284–323	304
S. Tibet	5	301–350	319
Turkestan	7	270–321	297
China	23	260–314	288

* Measurements supplied by Mr. H. F. Witherby.

Colonel Walton describes this species as very common up to 15,200 ft. in all the country visited and remarks on the large size of his specimens, one of which, a male, has a wing of 350 mm.

Biddulph, as quoted by Sharpe, says: "I think I saw this and the Alpine Chough up to the greatest heights ascended—say, nearly 20,000 ft."

[Generally distributed. Nest found with half-grown fledglings at Tinki Dzong, 16 June. Several visited our camp at 20,000 ft., on Mt. Everest in September.—A. F. R. W.]

Podoces humilis Hume.

144 ♂ 18.6.21 Chus La 13,500 ft.; 168 ♂ 26.6.21, 169 ♀ 28.6.21, 192 ♀ 4.7.21 Tingri 14,000 ft.

This Ground-Chough was described by Hume from specimens obtained by Dr. George Henderson on the Sanju Pass during the first Yarkand Mission.

At Khamba Dzong, 15,200 ft., and various places on the way to Lhasa, Colonel Walton found the Brown Ground-Chough not uncommon, but confined to bare and uncultivated land. Though this bird has been noticed within a mile of the Kangra Lama Pass, on the frontier between Sikkim and Tibet, it has not been recorded within the limits of the former country.

Colonel Steen, I.M.S., found several nests near Gyantse, the eggs from which he sent to Dresser.

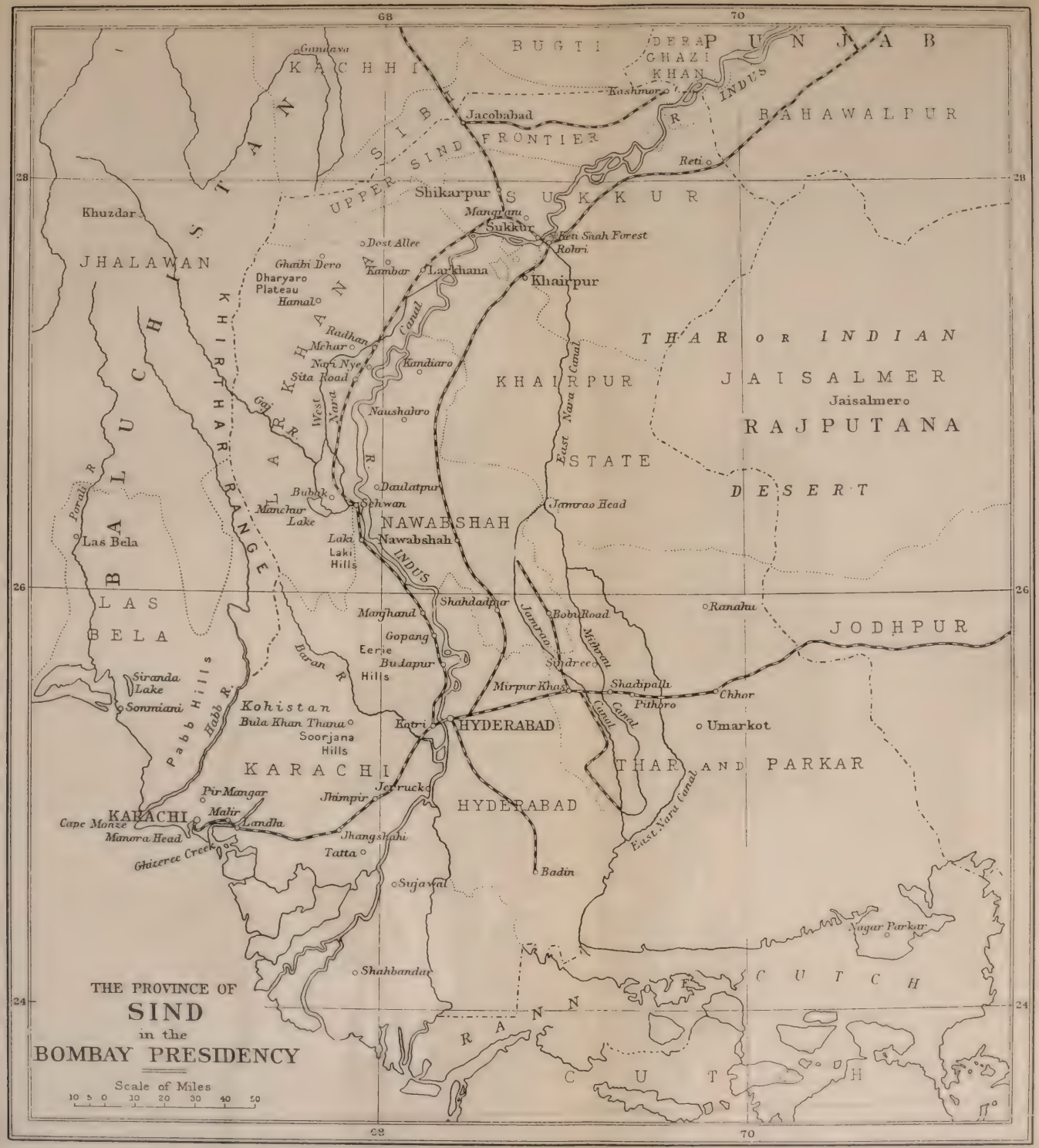
[Generally distributed. Nests found in holes in the ground or old mud-walls. Young birds on 18 June and later.—A. F. R. W.]

XXX.—*The Birds of Sind.* (Part i.)

By Claud B. Ticehurst, M.D., M.A., M.B.O.U., late Capt. R.A.M.C.

(Plate VIII.)

From 19 October, 1917, to 14 January, 1920, I was stationed at Karachi, the City of the Desert, and the port and capital of Sind. My spare time was devoted to ornithology. At first I intended to write merely a local avifauna of the


68
70
28
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PUNJAB
BUGTI
DERA GHAZI KHAN
KACHHI
Kashmore
INDUS R.
Jacobabad
BAHAWALPUR
UPPER SIND FRONTIER
Reti
Shikarpur
SUKKUR
Mangrau
Sukkur
Rori
Khuzdar
JHALAWAN
Dost Allee
Ghaibi Dero
Kambar
Larkhana
Khairpur
Dharyaro Plateau
Hamal
Radhan
Mehar
Nara Canal
Nari Nye
Sita Road
Kandiaro
THAR OR INDIAN
JAISALMER
Jaisalmer
RAJPUTANA
KHAIRPUR
East Nara Canal
Gaj R.
West Nara R.
Naushahro
STATE
DESERT
Porali R.
Bubak
Daulatpur
Manchar Lake
Sehwan
Jamrao Head
Las Bela
Laki Hills
NAWABSHAH
Nawabshah
INDUS
LAS BELA
Shahdadpur
Ranahu
Manghand
Bobu Road
JODHPUR
Gopang
Eerie
Budapur Hills
Jamrao
Mithrau
Sindree
Siranda Lake
Sonmiani
Baran R.
Mirpur Khas
Shadipalli
Chhor
Pithoro
Kohistan
Bula Khan Thana
Soorjana Hills
Hab R.
Pabb Hills
Kotri
HYDERABAD
Umarkot
Canal
KARACHI
THAR AND PARKAR
Pir Mangar
Jhimpir
Jerruck
Malir
Landla
KARACHI
Cape Monze
Manora Head
Ghizree Creek
Jhangshahi
Tatta
HYDERABAD
East Nara Canal
Badin
Sujawal
Nagar Parkar
Shahbandar
CUTCH
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CUTCH
THE PROVINCE OF
SIND
in the
BOMBAY PRESIDENCY
Scale of Miles
10 5 0 10 20 30 40 50

district, but as my stay lengthened and I became well acquainted with what had been written on Sind and personally visited other parts of the province, I decided it was a pity not to bring up to date all that is known about this interesting part of India, especially as it may again be many years before anyone interested in birds is stationed there. I myself prepared over 1500 specimens, and I have since seen most of those in the British Museum. My thanks are due to Mr. Culbertson (Karachi Port Trust), Mr. Casement (N.W. Railway), Mr. McCullock (Indian Police), Mr. Gordon (Canal Engineer), Mr. Ludlow (Educ. Dept.), and especially to Mr. T. R. Bell (Forest Dept.), who kindly handed me over all his Sind notes, for help in various ways, and to Mr. N. B. Kinnear for much help and advice.

Historical.—Sir A. Burnes, who toured through Sind in 1830, enumerated 191 species. In March 1839, Dr. William Griffith, who was an assistant Surgeon in the H.E.I. Co. Service and a botanist, in marching from Bahawalpur to Quetta halted a month at Shikarpore, where he collected a few birds, now in the British Museum, including one or two types. In 1854–5, Dr. Gould, son of John Gould, made a small collection, now in the British Museum. But it is to Hume that we owe most of our knowledge of the avifauna ; in 1872 he made with Dr. Francis Day a cold weather tour of three months, mostly in Upper Sind and Karachi, and published an excellent account in 'Stray Feathers' (i. pp. 91–289). Also in the 'seventies Mr. S. B. Doig (Engineer E. Narra Canal) enthusiastically worked his district, paying particular attention to the breeding species ; and at the same time the late Col. E. A. Butler was stationed for some years at Hyderabad and Karachi, and both contributed papers of value to 'Stray Feathers.' In 1878, Mr. W. E. Brooks made a cold weather visit to Upper Sind, chiefly working the Sukkur and Sehwan districts ; also in the 'seventies Blanford made several visits, surveying in the hills, Thar and Parkar, and the lower Beluchi boundary. The ornithological results of these trips were never fully published, but his specimens are in the British and Indian

Museums. Others who contributed notes in a lesser degree about this time to 'Stray Feathers' were H. E. Barnes, J. A. Murray, Col. Le Messurier, and Sir Evan James. Murray, who was for some time Curator at Karachi Museum, seemed to have done very little personally in investigating the ornithology of the province, but he wrote in 1884 the 'Vertebrate Zoology of Sind,' which as regards birds contains very little information about Sind in it. Barnes, who wrote the 'Birds of the Bombay Presidency,' added nothing in this work to what was already known about Sind, while Butler's 'Catalogue of the Birds of Sind,' etc., is only a bare list brought up to the date it was written (1879). Since 1880 practically nothing except a few odd notes in the Journal of the Bombay N. H. Soc. has appeared, but in 1907 an abbreviated list by E. H. Aitken was incorporated in the Sind 'Gazetteer.' From this work I have abstracted most of the information here given on the physical features. For fuller detail reference should be made to it.

Physical Features.—Sind has an area of 53,000 sq. miles, and is the most western province of India proper. Except for the Khirthar Range and its outliers, which runs from north to south along its western border, Sind is entirely plain, most of it being recent alluvium from the Indus, or sandy desert in those parts where the influence of the river has never been felt. Cultivation is for the most part found in the Indus valley and canal areas, but small amounts may be seen anywhere where rain-water can be dammed up or where wells sunk by river-beds can supply a sufficiency. These "rivers," of which there are many, are dry except for a short time after heavy rain, but their beds usually contain water deep down. The only stream of perennial water besides the Indus is the Habb River, while there are several hill torrents which, never quite dry, have trickles and pools, such as the Gaj, Narri Nai, Barun, etc. The rainfall is the smallest in India, and only averages 4 to 6 inches annually (mostly a few days in July or August), but sometimes no rain at all falls for two or even three years.

The mountains of the Khirthar run up to 4–5000 ft., the highest peak being Dharyaro, about 6000 ft. They are of Tertiary formation, mostly nummulitic limestone, but at Laki, Cretaceous rocks are exposed; however, some of the lower slopes and various valleys, such as the Habb and Barun, are sandstone. The only formation different from the main hills are the low hills in Naggar Parkar in the extreme south-east, which are granitic rocks of the Aravalli Range belonging to the Archæan system.

But for the numerous canals supplied by the Indus, the whole would be the dreary desert which the rest of Sind outside the canal area is; the canal influence is felt for a breadth of country running more or less parallel with the Indus from Kashmor to the mouth, covering a width of about 50 miles. These canals, most of which have been made since 1859, must have profoundly influenced the original avifauna of the province. Thus the East Narra Canal (1859) with its branches Mithrao (1879) and Jamrao (1899) brings into cultivation about half a million acres of what would otherwise be desert; its course is roughly that of the "lost river of Sind"—the Hakro. As two-thirds of the Narra water now flows down the Jamrao Canal, the conditions of the country and status of some birds in its lower reach may well be altered from what it was in Doig's day.

In extraordinary contrast to the desert portion, Sind contains a vast number of fresh-water lakes or jheels known as "dhands." After heavy monsoons, huge areas are inundated; while many pools exist for a few weeks only; many "dhands," gradually shrinking in size, exist almost till the next hot weather; others, again, are formed by canal overflows, and some of these are practically perennial lakes, many of them surrounded by tamarisk, reeds, rushes, etc., making a veritable paradise for aquatic birds, notably the great Manchar Lake, the largest fresh-water lake in India.

The climate is dry and the temperature averages high. In the hot weather, April–October, most of Sind is well-nigh unbearably hot; at Shikarpore, for instance, for weeks the temperature at night never falls below 100° F., and the shade

temperature often reaches in Upper Sind 115–120° or more (highest 132°); in the south-west corner, however, the hot weather is not so bad, the shade temperature being about 90° with strong sea breezes; in the cold weather this part is pleasantly cool at 80°, whereas in Upper Sind it is quite cold, and ground frosts at night are known.

Vegetation.—In the Indus valley and canal areas vegetation abounds, and in places is luxuriant. The trees consist chiefly of the acacias "babul" (*Acacia arabica*) and "kandi" (*Prosopis spicigera*), tamarisk "lái" (*T. gallica*), interspersed with "siras" (*Albizzia lebbek*), "nim" (*Melia azadaracta*), "pipal" (*Ficus religiosa*), etc., while in Upper Sind the white poplar "bahn" (*P. euphratica*) flourishes. The 87 forest areas (much of it hardly what we should call forest in Europe) comprise six million acres, and vary from one-quarter to two miles in width and up to 10,000 acres in size; some are really dense, others mere jungle; interspersed and in places making a forest of its own are the giant grasses "sar" and "khan" (*Saccharum*), which determine the distribution of not a few birds. Cultivation consists of cotton, wheat, barley, maize, millet, etc., in places rice, and many kinds of garden vegetables, while groves of guava, mango, and papeira are commonly seen.

The rest of Sind is in great contrast—the most dreary waterless desert and vegetation scanty. The euphorbia ("cactus" of the English) is the prevailing bush; on sand-dunes the "uk" (*Calotropis*) alone is seen, on rocky ground the "ber" (*Zizyphus jujuba*), and in many places the leafless caper "kirar" (*Caparis aphylla*) or the jhao (*Tamarix dioica*) alone relieve the monotony, save on the banks of some dry water-course, where a desert scrub-jungle of these bushes with the two acacias affords more or less thin cover. However, after the monsoon rain even the desert is transformed in places, and for a few short weeks many plants and grasses, the existence of which would never be suspected, spring up luxuriantly, and the bushes, nibbled down by goats and camels to a few bare stalks, shoot forth again to a respectable size.

The hills of Sind have their peculiar trees, and here the wild olive (*Olea ferruginea*), dwarf palm (*Nannorhops ritcheana*) and *Grewia* are found, while after rain, grasses and other plants make up a somewhat scanty vegetation. Possibly in nullahs where there is water more trees and jungle may exist, as some cultivation certainly does.

Along the whole sea-board with its innumerable creeks and mudflats the mangroves (*Rhyzophora micronotata* and *Avicennia officinalis*) "kámo" form considerable salt-water forests, while the salt-impregnated desert supports plants such as *Sueda*, *Salsola*, etc.

Migration.—There are two distinct migration routes in Sind; one of these is the eastern fringe of the route by which migrants from Afghanistan, North-west Frontier Province, and countries farther north pass to their winter quarters in perhaps Arabia and Africa. By this route must travel those species which, breeding in these northern parts, pass though Sind but do not winter in India; such are *Agrobates g. familiaris*, *Caprimulgus e. unwini*, *Coracias g. semenowi*, *Lanius collurio*, *L. m. assimilis*, *L. c. phœnicuroides*, *Merops apiaster*, *Monticola saxatilis*, *Muscicapa s. neumanni*, *Oriolus g. galbula*, and *Sylvia c. icterops*. This, too, is the route which *Glareola pratincola*, *Merops persicus*, *Cuculus canorus*, and birds which partially winter in Sind, such as *Upupa epops*, *Numenius phæopus* (and probably other Waders) take. For some reason which I am unable to explain, a number of these species do not come under observation on spring passage.

The second route is one from farther south in India to the northern breeding-grounds and *vice versa*, and is simply the western wing, in India, of the vast S. to N. and N. to S. movement by which the winter visitors to India depart and arrive; and apart from the winter visitors to Sind, the most conspicuous passage migrants on this route are *Motacilla f. beema* and *M. f. melanogrisea*, *Muscicapa p. parva*, *Phylloscopus n. nitidus*, and some Waders. By this route, too come the "rain visitors" to Sind, e.g. *Coccystes jacobinus Sarciophorus malabaricus*, *Coturnix coromandelicus*, etc.

a distinct offshoot from this main movement is one which has a more westerly trend, taking some species which winter in India to Persia, and by it travel *Emberiza melanocephala* and *huttoni*, *Œnanthe x. chrysopyga*, *Pastor roseus*, *Pterocles orientalis* and *alchata*, and possible others.

Besides these well-marked migrations there are local movements depending on the degree of cold in Upper Sind, and perhaps the Punjab, which moves down such species as *Coracias benghalensis*, *Cinnyris asiatica*, *Merops orientalis*, *Hirundo filifera*, while other local movements depend on presence or absence of water.

Avifauna.—Sind ornithologically is the western limit of the Indo-Malayan or Oriental region, and most of its breeding birds belong to this area; it, however, contains a sprinkling of true Palæarctic species, such as *Sturnus vulgaris*, *Alæmon alaudipes*, *Ammomanes deserti*, *Hippolais rama*, *Acrocephalus stentoreus*, *Œnanthe alboniger*, *Scotocerca inquieta*, *Glareola pratincola*, *Charadrius alexandrinus*, *Cursorius gallicus*, *Ixobrychus minutus*, *Pterocles coronatus* and *senegallus*, *Ammoperdix griseogularis*, and *Coturnix coturnix*; while in some others which are common to both regions it is not the Indian but a Palæarctic race which is found in Sind, e.g. *Halcyon s. smyrnensis*, *Columba livia neglecta*, *Neophron p. percnopterus*, *Cinnyris a. brevirostris*. So, too, the proximity to the Palæarctic area is borne upon one in viewing those passage migrants which I have described as taking the Arabian route, and which pass through this province almost alone of all India, while a fair number of Palæarctic winter visitors are only, or almost only, found in Sind.

Where then is the Palæarctic boundary? In reality there is none in the sense that there is a barrier beyond which no Palæarctic species go east and no Indian ones go west; the two areas tail off into each other over a considerable area from south-east Persia to Sind. Yet the Khirthar and part of the Mekran coast ranges do, together with lack of suitable "forest-jheel country" west of the Indus valley, undoubtedly limit the progress west of a number of Indian species. The

subject is a very interesting one and too long to go into here in detail; I hope to deal with this question more fully on another occasion. Suffice it to say that I have been unable to trace the following birds westward of the Sind boundary:—

Acridotheres ginginianus.
*Anastomus oscitans.
*Anas pœcilorhyncha.
*Anhinga melanogaster.
Anthus rufulus.
*Ardetta cinnamomea.
* „ flavicollis.
*Argya earlii.
†Bubo bengalensis.
„ coromanda.
†Brachypternus bengalensis.
†Butorides javanicus.
*Centropus sinensis.
*Dendrocygna fulva.
Eudynamis scolopaceus.
*Eupodotis edwardsi.
*Hydrophasianus chirurgus.
*Gallicrex cinerea.
*Inocotus papillosus.
*Laticilla burnesi.
*Liopicus mahrattensis.
Orthotomus sutorius.
Œnopopelia tranquebarica.
Palæornis nipalensis.
Pericrocotus peregrinus.
†Phalacrocorax javanicus.
† „ fuscicollis.
†Ploceus phillipinus.
„ manyar.
„ bengalensis.
*Prinia flaviventris.
Pycnonotus hæmorrhous.
†Pseudotantalus leucocephalus.
*Pyctorhis altirostris.
* „ sinensis.
*Riparia chinensis.
Ripidura albifrontata.
*Saxicola leucura.
* „ macrorhyncha.
Sporæginthus amandava.
*Sterna melanogaster.
* „ seena.
*Sturnus minor.
Temeneuchus pagodarum.
Tephrodornis pondicerianus.
*Xantholæma hæmacephala.
†Xenorhynchus asiaticus.
†Zosterops palpebrosa.

* Not found W. of Indus valley.
Some others extend to Las Belas; those marked † may also.

Though in many cases the race found in Sind is not that found over most of the rest of India, yet there are very few peculiar to Sind, such only, perhaps, are *Pyctorhis altirostris scindicus*, *Sturnus vulgaris minor*, *Sterna albifrons saundersi*?, others being the "dry area" form found over north-west India generally.

Measurements are given in mm.: wings—greatest possible length from carpal joint: tails from tip of uropygial gland: bills from true base except where otherwise stated.

Corvus corax laurencei Hume. "Dodar Kahn."

The Indian Raven has rather a curious distribution in Sind; to Upper Sind, for example at Jacobabad, it is a very common winter visitor, to Lower Sind a very rare one; Hume records it from Hyderabad, and I only met with it once—in the cultivation below the pass into the Soorjana. In the Khirthar range it is presumably more or less resident; here Day met with it in January, and I have seen eggs taken from near Jacobabad, presumably from the hills. It seems probable that those birds which reach the plains in winter have come from the adjoining hills or possibly from Beluchistan, where the bird breeds at the end of March. It is curious that it apparently does not breed in the plains of Upper Sind, where conditions are not very different to those in the Lower Punjab and where it breeds freely. In Thar and Parkar district, however, Blanford found it common everywhere in the cold weather, and obtained one at Ghotaru on the Jeysalmer side of the Sind boundary as late as 24 March, so perhaps it is resident there.

Soon after its arrival and just before its departure from Jacobabad, Hume was informed that great numbers die, and this was attributed to the heat and the diet of putrid fish. The Sind eggs measure 50 × 35 mm.

Corvus corax ruficollis Less.

The status of the Brown-necked Raven is somewhat uncertain. Probably it is a resident in the Khirthar, coming into the plains in Upper Sind in winter. There are but few records; Murray secured one from his collector at Jacobabad in February 1878, and this or another (Butler coll.) with the same data is in the British Museum, where there is also another from Phooloo Bunder, near Larkhana, obtained in January 1878 by Sir Evan James; while another from this district was in the Swinhoe collection. Both Ravens seem to occur round these districts in winter. On the Beluchi side of the Khirthar and all through British Beluchistan it is common. In Lower Sind any Raven is rare, and then only found close to the hills; I never saw this bird myself.

I have examined these Sind birds in the British Museum and also the whole series there, and I see (Ibis, 1921, p. 624) that Col. Meinertzhagen has come to the same conclusion which I had formed that birds from Cape Verde Is., Egypt, Palestine, and eastwards to India are all identical. These two Sind birds measure (unsexed): wing 386, 403 ; bill 65, 61 mm. Birds in the first year have less decided coppery tinge and wings browner than adults. I leave this bird for the present as a race of *corax* in lack of absolute proof otherwise.

Corvus coronoides levaillanti Less.

The only records of this Crow in Sind refer to Blanford's statement (Phys. Geog. Great Indian Desert, J.A.S.B. 1876) that it is found about the cultivation in the Thar and Parkar district, and referring to this (S. F. vii. p. 527) he says: "I know *C. duvauceli* exists in Sind." Apparently it is confined to the eastern boundary, and presumably resident there.

Corvus splendens zugmayeri Laub. "Kan."

Throughout the length and breadth of Sind the House-Crow is excessively abundant, its numbers being in proportion to the number of human habitations ; so far as I know, it does not occur in the hills. At sunset these birds flock together to roost in trees, and where these are absent, as at Sukkur, they flight out into the nearest forest, to return again at sunrise, and nowhere have I seen such incredible numbers as in that town. Always noisy, their cawing in a roost goes on at intervals all night. In Karachi they were building by the last week in May (earliest eggs 2 June), but many have not finished building by mid-June ; the earliest young were out on 18 July. Any tree is selected, and a considerable number breed in the mangroves of Karachi Harbour, a place they inhabit more or less all the year, feeding on crabs, molluscs, etc. I have even found nests in a Vulture's roost! The nests, quite neat affairs, do not differ from those of this bird elsewhere. Five eggs is the full clutch, sometimes only four or even three.

There are always more Crows about than nests, and this is accounted for by the fact (which I have proved by dissection) that the birds one year old, with brownish wings and darker grey collar, do not breed, but are performing a complete moult during the breeding season of the adults. Possibly, however, some of these birds may breed late in the year after moulting, as I have seen building going on on 5 November and seen young just out on the 15th ; this might, however, be late efforts of adults, which as soon as their brood is flying start to moult. The average of 36 eggs is 36·81 × 26·3 : largest 45 × 26·5 and 36 × 28, smallest 33 × 26 and 35·5 × 25. Mr. Stuart Baker informs me that they are not distinguishable from the eggs of typical *splendens*. Nothing comes amiss to this scavenger, and I have seen them in the hot weather scouring the desert for locusts. Considering their abundance, variations are not common ; a pale dun-coloured one and a silvery white one came under notice.

The Sind race differs from the typical one in having a much paler collar and under parts (as Hume noted), pale smoke-grey in fresh feather, creamy grey or dirty white in worn dress. Wing 255–290 mm., as in *splendens*.

It is found throughout Sind, Las Belas, Sibi Plain, and S. Punjab.

Dendrocitta vagabunda pallida (Blyth). "Mata" or "Malang."

Hume called the Tree-Pie common almost everywhere in Sind, but it is, of course, only common in the afforested area of the Indus valley and canal regions. Outside this it may be met with in small numbers wherever sufficient large trees or high jungle occurs—and this is in few enough places. Thus I have seen it in jungle on the Barun River at the foot of the Soorjana Hills, and it probably occurs in the main range valleys where trees are sufficient. It is quite resident and breeds from the end of April up to June, and is very partial to "kandi" and "babool" forest. I have found it always rather a shy bird, and usually but a glimpse of it is caught as it flies ahead from tree to tree.

The determination of the Sind birds led me to examine all the Indian specimens—a fine series of over 150—in the British Museum, and it is evident that more than one race occurs. I divide them up as follows :—

1. Dendrocitta vagabunda vagabunda Lath. Index Orn. i. 1790, p. 171. Type-loc.: Calcutta.

Bengal, Assam, Bhutan, and Buxa Doars (wing 145–164); Nepal (148–155); Burma (Upper and Lower) (138–165); United Provinces, Central Provinces, and Bombay Pres. south of Narbada (142–160); Travancore and Nilgiris (135–152); Mysore and Madras (140–152); Siam? 147–150 (only very few adults thence).

These vary a good deal in the coloration of upper and under parts, but over its very wide range I cannot see that more than one form is present, but it is noticeable that the birds from southern India do not run quite as large as elsewhere, though many from the rest of the range of distribution are equally small.

Over 100 specimens examined. Wing 135–165 mm.

2. Dendrocitta vagabunda pallida (Blyth) J. A. S. B. xv. 1846, p. 30. Type-loc.: Simla.

N.W. Himalaya (Kumaon, Gharwal, Dehra Dun, Simla) (152–176), Sind, Rajputana, Punjab, and N.W. Frontier Prov. (152–170).

As Blyth states, these are "paler; back and scapulars isabelline with a tinge of dusky, but devoid of rufous tinge; rump paler, belly and lower tail-coverts pure isabelline or buff cream-colour." I cannot agree with him, however, that they are smaller; as shown in the above measurements they average considerably larger. Hume (S. F. i. p. 206) remarked on the superior size of the Sind birds, but also said they "are dark like the generality of Upper Indian birds." I cannot distinguish any difference between these north-west Indian birds and birds from Simla, etc., and nearly every one can be picked out at a glance from Bengal birds.

About 25 specimens examined. Wing 152–176 mm.

3. Dendrocitta vagabunda saturatior, Ticehurst, Bull. B. O. C. xlii. 1922, p. 56. Type-loc.: Kaukareik Mts.

Very distinct from both the above races are the birds from Kaukareik Mts. in the Amherst district of Lower Burma, whence there is a large series in the British Museum. All these birds can be picked out a glance, the upper parts being browner, more "saturated" in colour than the typical race. The contrast between the head, neck, and mantle colorations is almost lost. Mantle dark brown, not so orange-red. About 20 examined: wing 138–152. Birds from Amherst approach this race (the few I have seen), but so far as one can judge, *saturatior* is confined to Kaukareik Mts., by which I suppose are meant the Dawna Range. It is not apparently found on Mulyit Mt. (*vide* S. F. vi.). Bingham (S. F. ix. p. 191) notices a darker variety which he shot at Kaukareik, but says he shot an ordinarily coloured one in the same tree; however, all from this locality are the same, as exemplified by the birds in the British Museum. Bingham remarks on the diversity of forest in this neighbourhood—dry, moist, evergreen, and teak; and maybe this Tree-Pie is confined to one particular (moist?) kind of forest.

There is a specimen of *D. leucogaster* in the Karachi Museum labelled "Kotri." It is an ancient specimen and the locality must be incorrect. Needless to say, this south Indian bird has never occurred in Sind, nor ever likely to.

Hume satisfied himself that a Jay, apparently from description *Garrulus melanocephalus* Géné. (= *G. atricapillus*), occurs in the Khirthar range. In the Karachi Museum are two specimens labelled "*G. melanocephalus* Jacobabad." These old specimens (in worn breeding dress!) certainly never came from Sind at all, and were wrongly labelled as to locality and as to species, for they appear to me to be *G. lanceolatus*! No Jay is known in Kelat or in the juniper forests of Beluchistan, and I am certain no Jay can inhabit the Khirthar.

Remiz coronatus (Severtz.).

Mr. T. R. Bell informs me that he met with this Penduline Tit in the dense well-watered tamarisk-and acacia-jungle of Andaldal close to Ruk Junction in February 1904, and again at Raoti about the same time. He remarks that he saw several small parties hunting for insects among the leaves of the tamarisk, hanging and clinging to which they seem as much at home as other birds do on twigs and branches; the note is a low, short "tweet." One of his specimens is in the British Museum.

This is the first and only record for Sind; this Tit was first found in India at Kohat by Whitehead in 1905, and Mr. Whistler saw it at Jhelum in 1914. It evidently wanders occasionally, perhaps regularly, into parts of north-west India. The Grey Tit, common in Lower Punjab, is not recorded in Sind, nor is *Parus nuchalis,* which occurs in Cutch.

Argya earlii (Blyth). "Lelo."

Throughout the canal areas of the Indus valley the Striated Babbler is common in damp or wet places where "khan" and "kandi" jungle or tamarisk afford thick cover; as soon as one enters such habitats from desert, scrub-jungle, or cultivation, this species takes the place completely of *A. caudata.* Always found in small parties, this species is more noisy but more skulking than its desert ally, and is less often seen on the ground, though, according to Mr. Bell, it must seek its food largely on the ground in dense cover, as he found its food to consist of small snails and Melolonthid larvæ. Its note is distinctive and much louder than that of *caudata,* and attracts attention when, in the last of the gloaming, one after another, the individuals of a flock seek the thick tamarisks to roost in. The nesting season is given as from March to October by Doig and Barnes.

This species does not occur west of Jhangshahi (70 miles east of Karachi).

Examples from Sind and Punjab are quite inseparable

from those from Calcutta, whence came the type of the species.

Argya caudata caudata (Dum.). "Hero."

Throughout Sind the Common Babbler is one of the most numerous and well-known birds affecting all habitats except the hills, thickest forest, and swamp. It breeds from mid-March to October; Mr. Bell thinks that roosting nests are also made. The flocks do not seem to break up, even in the nesting seasons, which is somewhat curious as they are not colonial nesters; interference with the young will bring the whole flock round squeaking their protests, and the presence of any undesirable animal is in like manner given away.

Wings measure: ♂, 80·5–83·5; ♀, 77–82. Bills from base: ♂, 20–23; ♀, 18–22 mm.

Juveniles differ from adults in having whitish tips to the dark feathers of the crown and no buff edges, so that the appearance is "scaly" instead of streaked; under parts as in adult, but more ochraceous on the pectoral region and flanks. Some adults are more rufescent than others below, and such appears to be the *eclipses* of Hume. Juveniles undergo a complete moult and adults moult once a year—in autumn.

Argya caudata huttoni (Blyth).

There is in the British Museum an undoubted specimen of *huttoni*, obtained by Blanford in the "hills south of the Gaj River" on 1 January, 1877, elevation not stated. The distribution of these two races requires further examination, and a series from the Sind hills with the elevations they were obtained at is desirable. A bird also in the British Museum from the Nari Nai is undoubtedly typical *caudata*, but may have quite well been obtained in the plains. I may here also note that I have examined a bird of the typical race from Kain in north-west Persia, a very unexpected locality.

This Sind specimen measures:— ♀. Wing 85·5; bill 21·5 from base.

[**Argya malcomi** (Sykes).

Like several other birds—*Caprimulgus asiaticus, Graucalus macei*, etc.—this Babbler is only recorded from Sehwan and only by Murray, and I would omit it altogether were it not that in the Bombay Nat. Hist. Soc. Journal there is mentioned one also from Sehwan presented to the Society by Swinhoe. It seems hardly credible that an isolated "colony" exists at Sehwan, which locality does not offer any marked contrast in terrain to many other places in the Indus and canal areas (where no one else has met with it), and which is separated by the breadth of Sind and miles of desert from its nearest known habitat. Murray's bird is still in the Karachi Museum and labelled "Sehwan," but his labels were not always correct. I leave the problem for future investigators.]

Turdoides terricolor sindianus (Ticeh.). "Sátbhái."

The Jungle-Babbler is very common throughout Sind wherever sufficient trees are found; in some of the forests along the Indus it swarms, and elsewhere it is found in proportion to the number of trees: in scrub-jungle I never met with it. It is a resident, of course, and starts breeding at the end of March; Mr. Bell records four fresh eggs on the 31st, and he says that high up in a leafy "babool" is a favourite site, and he also noted a nest in a pollarded bough of poplar twelve feet from the ground. I have found young on the wing by the end of April, noted birds sitting on 30 June, and found fresh eggs on 5 July, so that the breeding season is a long one and more than one brood is reared. Such nests as I have seen were always a fair height from the ground and as often as not towards the end of a horizontal bough of "babool," or else high up in thick milky euphorbia hedges (*E. tirucalli*); all were similar in structure—rather loose-made deepish cups, composed of coarse grass and lined with rootlets.

In the Bull. B. O. C. xl. 1920, p. 156, I separated the Sind bird by its general paler coloration; it extends to

Mt. Aboo and the Punjab. Wings, ♂ ♀, 104–110 mm.; bill 23–24. Iris white to pale straw; legs and feet dull yellow; bill yellow in the breeding season, horn-coloured in winter. The juvenile performs a complete moult, and the first primary in this plumage is much more rounded, not so pointed as that in the adult.

Pyctorhis sinensis hypoleucus (Frank.).

In the same area and in very much the same habitat as that frequented by the Striated Babbler, the White-eyed Babbler may be commonly met with. Usually seen in small parties, they are in habits typical Babblers and, though rather skulky, are very noisy; glimpses of them may be had as each one of the flock works its way through a dense tamarisk clump, comes to the topmost twig, and for a few seconds suns itself, perhaps giving forth a few notes of its pleasing little song ere it dives in again to resume its hunt for insects. In life the iris is buff, changing to yellowish after death.

According to Mr. Bell, it breeds at the end of April and beginning of May; Doig thought it also bred in July and August. Barnes, who examined many nests in Sind, says the eggs are always of one type—a delicate pinkish-white ground, thickly freckled with specks of brick-red.

A bird of such wide distribution—China to Sind—is very likely to show geographical variations, and in determining my Sind birds, I examined the enormous series in the British Museum. I can distinguish the following races :—

(i.) Pyctorhis sinensis sinensis (Gm.) Syst. Nat. i. 1789, p. 1012: China.

China (Canton); S. and W. Yunnan, Siam, S. Shan States, Burma, Assam, Bengal; to this race I am inclined to assign birds from the Central Provinces and Madras, and Belgaum district; where exactly this race meets the next in the Bombay Presidency is not clear, but birds from Khandeish northwards belong to the next race.

(ii.) Pyctorhis sinensis hypoleucus (Franklin) P. Z. S. 1831, p. 118. (Between Benares and Calcutta, and between the former and the Vindhya Mts.)

I restrict this to the United Provinces in order to avoid creating a new name, as it cannot be now determined where Franklin obtained his type.

Sind, Jodpur, Punjab to Umballa, Dera Ghazi Khan, N.W.F.P., United Provinces, Khandeish, Kathiawar.

Decidedly paler on the upper parts (a greyish rufescent tone) than *sinensis*.

(iii.) Pyctorhis sinensis saturatior Ticehurst, Bull. B. O. C. xlii. 1922, p. 57 : Bhutan Doars. Nepal, Sikkim, Bhutan and Buxa Doars.

As the name implies, this race is darker in colour everywhere on the upper parts than the typical form. In the British Museum are a fine series of these birds from Bhutan and Buxa Doars, and there are quite similar specimens from Nepal. There are, however, two skins of Hodgson's labelled "Nepal" in Gray's handwriting : Hodgson's original label is not attached to these birds, and they are quite unlike birds labelled "Nepal" by Hodgson and belong to the typical race ; it seems very probable that they were not collected in Nepal at all, but during one of Hodgson's excursions to the plains. *Pyctorhis longirostris* of Hodgson, given as a synonym of *sinensis* in the Cat. Birds Brit. Mus., does not apply to this race but to *Argya longirostris*—quite a distinct bird ; neither does *A. rufifrons* Hodgson, given by Blyth (Cat. Birds As. Soc. p. 150), apply.

(iv.) Pyctorhis sinensis nasalis Legge (Ann. Mag. N. H. (5) iii. 1879, p. 169 : Ceylon). Ceylon.

Timalia bicolor Lafr. (Mag. de Zool. 1835) was a new name for *hypoleucus*, and *T. horsfieldii* Jard. & Selby (Ill. Orn. pl. 119, 1831, Oct.) is not assignable to any locality, but the description is suggestive of the typical race.

Pyctorhis altirostris scindicus Harington.

Blanford obtained the only known specimen of this race at Mangrani between Sukkur and Shikarpore. I was always

on the look out for this Babbler, which, I believe, is an inhabitant of thick "khan" jungle, but I never came across it. It is probably very local and very skulking, and so easily missed. Moreover, in some years, at all events, this high grass-jungle is much cut and at times burnt, and so, unless one is resident in Upper Sind, the location of a suitable jungle is difficult. The single specimen seems distinct enough from the typical race.

Hypocolius ampelinus Bp.

The only record of the Grey Hypocolius from Sind and India is that of Blanford, who, when encamped at Mazarani Nai, due west of Larkhana, on 6 March, 1875, had a specimen brought in by his collector. It was obtained on a stony hillside amongst the lower hills of Khirthar. This bird must indeed have been a straggler, its nearest known habitat being Bushire and the head of the Persian Gulf.

Ægithina nigrolutea, which is common in Cutch, may well occur in extreme south-east Sind.

Pycnonotus leucotis leucotis (Gould). "Bulbul."

The White-eared Bulbul is a common and constant resident throughout Sind wherever there are gardens, cultivation, or trees, being equally numerous in gardens in towns as away out in the thicker jungle; in fact, it is only absent in quite bare tracts or mean scrub. It even occurs in the lower hills and euphorbia-jungle, unattractive though they seem. Its cheery note is one of the very few songs which enliven an otherwise songless land, and for this reason it is a general favourite and one of the few birds everyone knows. It is usually met with in pairs or perhaps family parties, but I once saw a scattered flock of about fifty individuals in a line of tamarisk at Lhandhi, near Karachi, attracted there by an abundance of a species of beetle. It occurs out to the Beluchi frontier.

In Hume's 'Nests and Eggs' it is stated that this Bulbul breeds in most places in July and August, but somewhat earlier in Sind. This is quite misleading, as I have seen eggs

taken on 25 March, and have found nests ready for eggs on 23 March and 16 April, and observed young on the wing by 17 April. Mr. Bell, too, records several nests with fresh eggs in the last days of March, so that one may safely say that this is the normal time for first layings. It must breed several times in the course of the year ; I have seen it feeding young on 24 June, and found a nest with two feathering young on 14 September, but I think that this late nesting only occurs in those years when rain has fallen, and when there is good cover in the way of fresh-leafed bushes and trees and hence a good food-supply in the shape of fruits and insects : this latter nest was in a flowering "kandi" bush in desert scrub, a bush which a few weeks previously was a stunted nibbled-down relic !

An interesting instance of hybridization with a Red-vented Bulbul is given under that species.

Five males : wing 81·5–84·5, tail 79–84, bill from base 16·5–17 mm. Females are smaller.

Pycnonotus hæmorrhous pallidus (Baker). "Thar Bulbul."

The Red-vented Bulbul is resident in the easternmost part of the province ; Blanford found it not uncommon in the Thar and Parkar district east of Umarkot, and Butler and Doig have recorded it as being common in the E. Narra at Sindree (the canal engineer's bungalow), where it breeds in rose bushes, etc., in July and August ; I have seen it in the same district at Chhor. The East Narra Canal seems to be the limit of its distribution westwards.

The only other place I have seen it is at Karachi ; here a pair or two frequent the Lyarree Gardens, always in the same spot, and Mr. Ludlow tells me he has seen a pair or two also in the Zoological Gardens ; all these Karachi birds I believe to be escapes or progeny of escapes. I frequently saw a Red-vented Bulbul about with a White-eared species during the cold weather of 1918, and in June 1919 they built a nest in the fork of a guava tree and hatched out two young, which I saw both the parents feed in turn. I took one of these hybrids and tried unsuccessfully to rear it.

It was darker underneath than the young of *leucotis*, and the under tail-coverts were ginger-coloured, more as in *hæmorrhous*, not yellow as in *leucotis*, while the white cheek-patch of the latter was indicated in a dusky-grey patch.

In years to come, maybe, some strange-looking Bulbuls will be found there as the result of hybridization. Hybrids between *leucogenys* and *intermedius* are known from Kohat (Ibis, 1909, p. 111), while *magrathi* from Bannu appears to me to be a hybrid between *intermedius* and *leucotis*, though the former is said not to occur at Bannu (see *t. c.* pp. 114, 303 and pl. v.).

Elsewhere in Sind there are no records of this bird, except that Murray states that he obtained one at Sehwan, but I think it quite likely that this also was an escape, as no one else has met with it in this district. It is common in Cutch and in Lower Punjab as far south at least as Multan, and might be found, one would think, at Kashmor on the north-east boundary of Sind, where, however, Hume did not come across it.

Sitta castaneiventris castaneiventris Frank.

Mr. T. R. Bell records that on 24 January, 1905, he obtained a single specimen of the Nuthatch in a "babool" groove in the Raoti Forest in Upper Sind. This is the first and only record in Sind, to which it must be a mere straggler. It does not inhabit the juniper forests of northern Beluchistan, nor was it found in the N.W. Frontier Prov. by Whitehead and is not known from Mt. Aboo. The nearest locality for it appears to be Dungarpur in the extreme south of Rajputana.

The Rock-Nuthutch (*S. n. tephronota*) is very likely to occur on the highest parts of the Khirthar as it occurs on the Beluchi side in Kelat and, of course, in Quetta.

Dicrurus macrocercus macrocercus Vieill. "Kalkanchi," *i. e.* black scissors (=*D. ater* auct.).

The Drongo is very common everywhere except in the hills and barest deserts, and even in the latter one may come across a few following a herd of goats, on the backs or heads of

which animals they will take up their perch. In the evening these Drongos flight in from the desert, flying high in twos and threes to their accustomed roost, at which time quite large flocks congregate on some bare tree or on any perch near the ground to partake of their last meal. Little insect-life comes amiss, and I have seen them successfully hawk dragonflies. Pugnacious at all times, in the breeding season I have seen one bully even a Pallas' Fish-Eagle!

The nest is usually of the slung Oriole-type, but I once saw one in a four-forked prong of a guava, which was quite round and cup-shaped.

Agrobates galactodes familiaris (Ménétr.).

The Grey-backed Warbler is a passage migrant through Sind, taking the "Arabian route" to reach its winter quarters; I only met with it, and that regularly, on autumn migration. The passage lasts but a short time—3 to 24 September, first and last dates,—and it may then be found usually singly in thin scrub-jungle out on the desert, haunting the small shady tracks which goats have made through the bushes; here, hopping about with tail erect searching for beetles, it is quite tame and quite unmistakable. Those I procured were always exceedingly fat.

It has been recorded in several places in north-west India on autumn passage, and I doubt the correctness of the statement that it is a cold weather visitor. The only record that I know of in the cold weather is that of Murray, who stated that he got one at Trainhee on the Manchar Lake on 30 November. Very likely Murray mixed up the dates (he was very careless in labelling), or possibly it was a delayed migrant (see note under Rock-Thrush).

Why the spring migration of this species should miss Sind is not clear, but several other species which take the same route, such as the Common Whitethroat, Spotted Flycatcher, Red-backed Shrike, etc., and which I observed at each autumn migration, never came under notice during spring passage. The statement that this bird breeds in the Multan district of the Punjab should, I think, be verified by breeding specimens.

Most Passerine passage migrants have fully moulted ere they leave Sind, but this bird is an exception, as several adults I obtained, though not in moult, had only partially moulted ; one had moulted its body- and tail-feathers but not its wings, another had only moulted part of its body-feathers. Two birds of the year have not moulted their juvenile tail-feathers.

Zarudny has described (J. f. O. 1911, p. 238) a race of this bird as *iranica* (Zagros Mts. and Beluchistan). As there are apparently no specimens in England from the Caucasus, the type-locality of *familiaris*, I am unable to determine whether Sind and Beluchistan birds differ in any way from typical specimens.

My series measure :— ♂. Wing 84–89·5, tail 64–67, bill 18–18·5. ♀. Wing 85–86·5, tail 63–65·5, bill 17·75–19·5.

The second primary is equal to the fourth or fifth, between these, or between the fifth and sixth.

Locustella nævia straminea Seeb.

I only met with the Turkestan Grasshopper-Warbler on the Manchar Lake ; on 10 March, 1919, and again in exactly the same spot on 27 December, 1919, I flushed two or three out of dense sedge and rush on damp ground on an island, and secured one on each occasion. They are exceedingly skulking birds and are not flushed till nearly trodden on, and after flying a short way dive into the thick cover and run with great rapidity. On the wing they look very pale and grey.

This Warbler, which has not been recorded in Sind before, was not unexpected, as it has occurred sporadically all over the plains of India ; it is probably a winter visitor. The March bird was performing a body moult.

Two males : wing 60, 61 ; tail 58–59. 2nd primary is between 4 and 5 or =5.

Acrocephalus stentoreus brunnescens (Jerd.).

In the more watery parts of Sind the Eastern Clamorous Reed-Warbler is very common ; everywhere on the inland

waters where reeds grow or, failing these, where tamarisks grow in water, this bird compels notice on account of its loud croaking note, even if the bird itself does not afford more than a glimpse. It is mostly a winter visitor, partly also a resident, and in the dry corner round Karachi it is a passage migrant. Dealing with the latter status first, passage migrants may be seen from the first week in September onwards, never very many, and at these times I have found them in quite dry situations, such as in tall acacias in cultivation or tall "jowari" crops ; they pass through again from mid-April, and the latest I have seen them is 2 May. Probably these passage periods correspond to the times of arrival and departure of the winter visitors elsewhere.

Doig (S. F. ix. p. 279) was the first to record that, at all events in the E. Narra District, this Reed-Warbler was resident and bred in August (see 'Nest & Eggs,' i. p. 225).

I see no reason why this bird should not breed in any swamp or jheel which has permanent water and reeds, such as at the Manchar Lake, but though constantly on the look out for old nests in the cold weather, I never came across one ; many places which in winter seem suitable breeding places are in August dry or only recently flooded. I could never make out whether this bird bred in the mangrove swamps of Karachi Harbour or not ; Mr. Bell states that he has heard its well-known note there during the months of July, August, and September, and he thought it doubtless bred there ; in another year he heard them in April and May, and searched the mangroves on 19 May for a nest, fruitlessly however. I have struggled through these mangrove forests at all times of the year, probably more than anyone, and the only indication I had of this bird's presence was on 17 and 18 July, 1918, when a single bird was undoubtedly singing there : on subsequent visits it was neither seen nor heard. It may be that it breeds there in some years and not others, or perhaps it used to breed there ; of recent years this forest has been much cut down for camel fodder. It is known to breed in the mangrove forests of the Mekran coast.

Acrocephalus dumetorum Blyth.

I did not find Blyth's Reed-Warbler at all a common bird, and its status seems uncertain; all that I obtained or identified were in spring from 29 March to 2 May. Butler records it in the cold weather and spring, while Blanford obtained it in autumn; probably it is a spring and autumn passage migrant, and some spend the winter in suitable places. This bird is a Reed-Warbler in name, but it has none of the habits of that group; it is almost invariably met with creeping about the higher boughs of a leafy "babool" tree nowhere near water, and its mode of living exactly resembles that of the Tree-Warblers.

Birds in March and April are undergoing a body moult only.

Acrocephalus agricola agricola (Jerd.).

The Paddy-field Warbler is a common winter visitor to Sind in suitable localities, and such places are any piece of water with tamarisk, sedges, reeds or grass of any height growing round and in the edge, sedge- and reed-covered swamps. It only seems to have these two requirements—the ground must be damp or wet, and cover must be thick. Elsewhere I never saw it. From the nature of its haunts it necessarily appears to be rather a skulker, yet where it does occur it is so numerous that it cannot be overlooked; I found it especially abundant on the Manchar and Jhangshahi Lakes. I have no date of its arrival, though I found it absent in suitable places on 15 September, so it probably comes later than that; and I have seen it still common on 31 March, so it leaves sometime in April. In the field the more rusty-brown less dark upper parts and absence of the clear white supercilium at once distinguish it from *Lusciniola melanopogon*, which inhabits the same spots.

Eight specimens (January to March); all belong to the typical race. Wings measure 56·6–60·5 mm.; the second primary lies in length between the sixth and seventh, or equals the sixth or seventh, and in two specimens between the seventh and eighth. Spring moult begins early in March.

Iris greyish brown ; legs and base of lower mandible flesh-coloured, rest of bill brown.

Orthotomus sutorius sutorius (Forst.).

The Tailor-bird is common in the better cultivated parts of the province; it is, of course, resident. In Karachi and other towns it is a garden bird, and few compounds with a sufficiency of thick evergreen bushes in them lacks its pair. Though a familiar bird, which may even nest in the pot-plants in the verandah, it is secretive in habits and is more often heard than seen, its rather discordant, strident note, very loud for so small a bird, being quite unmistakable. It breeds at the commencement of the hot weather.

The type-locality for this species is Calcutta, and on comparing Sind specimens with birds from this region, I cannot detect any difference between them, which fact is interesting though not surprising, as this species does not come under the influence of desert conditions, and its habitat in Sind does not differ remarkably from that of many places in India where it is found.

Lusciniola melanopogon mimica Mad.

A common winter visitor to the reed- and rush-covered "dhands." The earliest record of their appearance is 8 September, but I think the majority do not appear till October. When they leave Sind I do not know, but I still saw plenty on 10 March. Hume describes it as frequenting the "dhands" in the Larkhana District, such as Guibee Dehra, which are so thickly covered with dense rush as to appear to be one waving field of herbage. I have seen them in similar places, also in reed-beds, and round the edge of "dhands" where tamarisk and rushes intermingle growing in water. As a rule it is rather a skulking bird, and in some circumstances seldom shows itself where cover is very thick ; at times, however, I have found it tame and not at all inconspicuous. Such a time was on the Manchar Lake at Christmas 1919 : the lake was very full, and consequently the reeds neither very high nor thick; everywhere where there were any reeds at all, often a

mile from land, the Moustached Sedge-Warbler was simply swarming. When shooting Ducks on this lake, we took with us some tamarisk boughs to stick up in the reeds to supplement their scanty cover ; and on more than one occasion, as I was standing quietly in my "blind," one or more of these little Warblers, which were in numbers busily employed in the reeds a few yards from me, would hop up into the the tamarisk boughs to investigate within a few inches of me, keeping up all the while their curious scolding clucking.

I have no knowledge of their breeding in Sind, though some are said to do so near Quetta ; however, no one has visited these dhunds in hot weather.

All my birds are typical *mimica*. Two birds of the year were still moulting their wings and body plumage on 4 November. Early in February the spring body-moult begins. Legs olive-brown, bill brown, horn-flesh at the base of lower mandible.

Three males, wing 60–64 ; nine females, 60–63 mm.

Cisticola uncidis cursitans (Frank.).

The Fan-tailed Warbler is fairly common in Lower Sind wherever there are thick crops, such as cereals, lucerne, tall grass, and rushes round the drying edges of swamps and jheels. It appears to be less common in Central and Upper Sind ; it is a resident. The breeding season is a very long one ; Mr. Bell records it breeding in Upper Sind in February ; at Karachi, where I saw a good deal of it, I ascertained that it bred continuously from early April up to the end of October, on the 25th of which month I found a nest of young quilling. The stronghold of this species at Karachi is the coarse grass, grown in the Sewage Farm ; it was curious to see how these birds will find out a new breeding place. On the east side of Karachi there is a depression out in the desert which, after rain, fills up and quickly becomes full of rushes and sedges ; this spot in mid-August 1919 was bare desert (and had been so nearly two years) ; it filled on 26 August, and as soon as enough cover grew up, several pairs of *Cisticola* turned up and bred ; now,

the nearest habitat of these birds was a good three miles away, and to reach their new ground they must have crossed a considerable (for them) stretch of unsuitable country; this circumstance shows how readily even very sedentary birds wander at times. By the end of November this jheel was again bare desert, and the birds gone again of course.

My series measure :—♂, wing 50–54·5; tail, summer, 36·5–40; winter 41–47. This species performs a complete moult in May; the juvenile resembles the winter plumage, which is not like the summer as is stated in the 'Fauna of British India'; it is much more streaked with ochraceous, especially on the head, which in summer is pale brown. In the J. B. N. H. S. xxvii. p. 482, Mr. Stuart Baker has fixed the type-locality as Shillong; this bird was described by Franklin as *Prinia cursitans*, P. Z. S., Aug. 9th, 1831, p. 118, and this paper also appeared in the J. A. S. B. i. July 1831, and it is there stated that Franklin's birds came from between Benares and Calcutta, or between Benares and the Vindhyan Hills, so that the type-locality must be fixed in the United Provinces or Bengal. I cannot see any difference between Bengal, United Provinces, Punjab, and Sind specimens.

Franklinia buchanani (Blyth). "Chīho."

In the more desert portions of Sind the Rufous-fronted Wren-Warbler is common, and I cannot understand how Hume failed to meet with it frequently, for he regarded it as uncommon. It is a bird essentially of desert scrub-jungle, where euphorbias, a few camel-thorn and acacia bushes make up, with tussocks of desert grass, a scanty vegetation. In thicker forest or jungle, or cultivation proper, I never saw it. I found it common throughout Lower Sind and in the ravines of the lower hills, such as the Soorjana.

Doig thought that it bred in the Narra District in April, and Mr. Bell records what he thought was a nest of this species with eggs on 5 April, but according to my experience this bird is still in winter plumage in April and performs a complete moult in May, which is completed by

the third week in June, by which time the organs begin to enlarge, and it breeds in July and August, and this agrees with Barnes' statement for the breeding period. This little Warbler is one of the very few birds which enliven the desert with its pleasing little song. It extends as far west at all events as the Beluchi boundary at the Habb River.

A series give the following measurements :—

♂, wing 51–55·5 ; tail, summer, 53–56 ; tail, winter, 63–70 mm. ♀, wing 47–51 ; tail, summer, 51–60; tail, winter, 68 mm.

Adults undergo a complete moult in May and again in October–November, while the juveniles also undergo a complete moult into winter dress. Iris yellow-brown ; bill brown, flesh-coloured at the base, darker in summer ; legs pale flesh.

Sind birds are in no way separable from those from the Deccan and Bengal.

Laticilla burnesi (Blyth).

Burnes' Grass-Warbler is confined to the Indus and canal areas where thick jungle exists ; here it is locally common and resident, and outside this terrain it is not met with. It is found from the northern frontier right down, at any rate, as far as the Jerruck division. It is one of the most skulking of birds, only equalled by Cetti's Warbler, and during the day little or nothing is usually to be seen of it ; just after daybreak, however, and just before sunset, it comes out of its thick retreat on to the outside of a bush, and creeps about, singing cheerily at intervals, only to dive into thick cover at once on being disturbed. It is a bird of the "khan" grass (*Saccarhum arundinaceum*), which in places presents an unbroken sea of grass, or where much of this grass is intermixed with the two acacias or tamarisk ; so that, in addition to its skulking habits, it is very difficult to observe on account of the thickness of the cover and restriction of one's view.

Doig found it breeding in the E. Narra District on 13 March, and has given a full description of its nest (S. F.

viii. p. 373), while he found eggs as late as July, and says it breeds again in September, so that the nest season is a long one. Mr. Bell, who has given me many notes on its nesting, has seen it building as early as the middle of February. He says the nests (and he has found a good many) are nearly always built into a grass clump almost on the ground and are well hidden; the birds always seem to select a clump which is on the edge of a small clearing in the forest. The nests are untidy outside but neat enough inside, and are composed of "khan" grass down with fine grasses admixed with a few tamarisk twigs, and lined with down, fine grass, tamarisk seeds, and sometimes a feather or two of Partridge; the female does the building. The bird sits close, skulking off into thick cover on being disturbed, whence it soon returns, and starts chattering at the intruder. They feed mostly in the thick cover they frequent, occasionally on the ground, turning over leaves and searching nooks and crannies for insects, when their actions resemble those of Babblers. The song of the male is very loud for the size of the bird, and reminded me much of that of the Hedge-Accentor; the female has a chattering note.

Sind birds are topotypical; from outside Sind and Punjab I have seen no specimens.

[**Chætornis locustelloides** (Blyth).

In December 1919, I flushed in some high "surpat" grass in the Karachi Sewage Farm a bird which I am as certain as I can be was a Bristle-faced Grass-Warbler. It kept settling quite out of sight at the bottom of the grass, which here was considerably higher than my head; consequently I had ultimately to shoot it on the wing, and unfortunately never retrieved it. This is not an unlikely bird to occur in the "khan" grass-jungle of Upper Sind, but to Karachi it must have been a straggler.]

Hippolais rama (Sykes).

Except in the desert portions of the province, Sykes' Tree-Warbler is common, especially in the Indus Valley; it is

perhaps a resident or possibly some are summer visitors, and certainly I think visitors from farther north come to Sind in the cold weather, at which season it may be found in more desert places where a little cultivation and tree growth exists, as round Karachi, but where it does not breed. My only reason for thinking that it is a summer visitor is that I was in its breeding-ground in winter and failed to see a single one, and it did not strike me as being very common, though not rare, anywhere in winter.

Doig first recorded the breeding of this bird in the E. Narra District; he found the first nest in March 1879, and subsequently discovered many nests and obtained parent birds. The nests were in dense-foliaged pollarded tamarisks, well hidden in the centre of the clumps and composed of sedge, lined with fine grass and vegetable down. The normal clutch was four. Mr. Bell has sent me some excellent notes on the nesting of this bird. He says it is plentiful all down the Indus in the tamarisk-jungles, and the birds may be heard singing "all over the place"—Sadnani Forest, Mari Forest (north of Hyderabad Dist.), and Ketishah Forest (north of Sukkur) are places specially mentioned. Fresh eggs may be looked for in the last week of April and first week of May. The nests are mostly situated in tamarisks, pollarded or not, 6 inches to 7 feet from the ground, though twice he found nests in grass clumps in a "khan" grass-jungle. When in tamarisk, the nest is usually well hidden in the thick, or "camouflaged," if exposed, by a litter of twigs round it, and is made of tamarisk twigs and fibre, often woven in silky threads, lined with feathers or hair and fine grass and grass-down; one nest in grass was composed entirely of grass-down, another of grass-fibre. The whole nest forms a slightly built, deep cup; the cup is 30–40 mm. deep, internal diameter about 50 mm., external about 80 mm.

Barnes records eggs taken "by a friend" from near Karachi; I searched in vain for any evidence of its breeding there at the present day. In the districts where it does not breed it may be looked for from mid-August onwards in small numbers, and it leaves again early in April. During

the cold weather I have usually found it creeping about in "babools" or leafless caper, feeding in a Phylloscopine fashion, and, like *Ph. tristis*, it often flies out from the extremity of a bough to take insects on the wing.

I am unable to recognize *H. obsoleta* Severtz., which Oates admitted to the 'Fauna' on the ground that a bird was obtained in Sind (according to Seebohm). I have examined a large series of *rama*, and none of the distinctions given in the 'Fauna' between this and *obsoleta* hold good; some of my specimens should thus be *obsoleta* on one character and *rama* on the other two or *vice versa*, and the coloration of the upper parts varies also individually and very much according to wear.

Nor can I admit that *H. pallida* has any place in the Sind or Indian Fauna. Hume at first recorded that he had received this bird from Sehwan, but later (S. F. ix. p. 232) thought he was mistaken. There are two specimens from Sehwan in the British Museum, and both are *rama*; nor are there any specimens of *pallida* there from Sind or India. Dresser says he had seen a bird from Sind, and Barnes, copying Murray (who obviously did not know the Warblers), called it a winter visitor.

I have been unable to trace this species (as *H. pallida elaica*) farther east than Bampur in Persian Beluchistan, where Blanford obtained it in April, all other specimens purporting to be this species from farther east which I have seen, being in fact *H. rama*, which itself extends westward at least as far as Shiraz.

17 males, Sind and Punjab, measure: wing 61·5–65; tail 54–57 mm.

5 females, Sind and Punjab, measure: wing 60–62; tail 52–57 mm.

Wing formula $2=\frac{7}{8}$ or $\frac{8}{9}$, very rarely $\frac{6}{7}$; sixth primary emarginate.

In *elaica*: wing (male) 65–68 mm.; $2=\frac{6}{7}$; sixth primary not, or only very slightly, emarginate.

In *rama* the first primary falls short of wing-tip by 27·5–34·5 mm.; the second primary falls short of wing-tip by

10·5–12·5 mm. The first primary exceeds the primary-coverts by 5–10, mostly 7–9 mm.

Birds shot in February, March, and April showed no signs of any spring moult.

Hippolais scita (Evers.) = *H. caligata* auct.

The records of this bird are not very satisfactory. Butler in 1878 said it occurred in the neighbourhood of Hyderabad and Karachi, and Murray says he obtained one at Jhimpir in November. At the time these authors wrote the Warblers were much mixed up, and identifications made then cannot always be relied upon. There are no Sind specimens of this bird in the British Museum, but Murray's bird is there, and it is undoubtedly a specimen of *H. rama*. Butler evidently was not sure about these Warblers, as there is in the British Museum an example of this species obtained by him at Deesa, in Rajputana, labelled *rama* by him.

Mr. Whistler informs me that the Booted Tree-Warbler is a passage migrant in the Lower Punjab, and its migration route, like those of some other species, may not pass through Sind ; however, I think this unlikely, as there are undoubted specimens in the British Museum from Kelat on spring passage. Although on the look out for it always in Lower Sind, I failed to meet with it in two and a half years' close search.

H. languida occurs in Beluchistan, but has not so far been recorded in Sind.

Sylvia communis icterops Ménétr.

The only previous record of the Eastern Common Whitethroat is that of Butler, who stated that his collector obtained a specimen at Kotri or Karachi. This bird is a fairly common autumn passage migrant in the first days of September (1st and 5th), and are most numerous about the third week of the month; last seen 9 October. During its halt it is an exceedingly skulking bird, and unlike its lesser relative (*affinis*), does not affect trees, but is usually found in cultivation such as "brinjals" etc., or acacia bushes in the vicinity ; or, if the monsoon has brought rain and

the desert bushes have sprouted into life, there in the thickest "kandi" bushes this bird may be found and a glimpse obtained as it flashes out, and in wet years more are induced to halt than in dry years.

This is one of those species which pass through Lower Punjab and Sind east to Mt. Aboo, and take the Arabian route to reach the winter quarters (Yemen, Sept.). All my specimens are very typical *icterops*, with darker greyer brown upper parts than the European bird has.

Sylvia hortensis crassirostris Cretzsch.

The Eastern Orphean Warbler is not very uncommon, and is generally distributed wherever leafy trees, especially babools, are found; and consequently, I think, in very dry years, when most trees are not in good leaf, it is scarcer in Sind as a whole; at least I noticed it to be far less common in 1918–19 when the monsoon failed. Even in desert scrub-jungle it may sometimes be seen creeping about in the leafless caper bushes. The earliest I have seen it is 6 August, though most come perhaps in September, and the latest was noted on 14 April; I could detect no through-passage. A shy, skulking bird, it keeps pretty well to thick foliage and is an adept at concealment.

8 males: wing 80–83; bill from base 20–22 mm.

8 females: „ 77·5–81; „ „ 20–21·5 „

The crown in the female is never so black as in the male, being more of a dark slate-colour. The juvenile moults the body-feathers, always the central pair, sometimes others of the tail-feathers, all the coverts except the primary series, and not uncommonly (three specimens) the three or four outer primaries and inner secondaries. The markings on the juvenile tail are less sharply defined black and white than in the adult.

Sylvia nana nana (H. & E.).

This little bird is well named the Desert-Warbler, as it is found in such barren spots as no other self-respecting *Sylvia* would deign to haunt. In anything like thick scrub

one very seldom sees it; away out on the wind-swept, sun-scorched, sandy plains, where here and there a small caper "kirru" bush or some few scattered insignificant desert plants struggle for existence, is the home of this little bird (and of little else save *Allœmon*), which may be seen creeping about, making use of all the scanty cover it can and seldom showing in the open, or running round on the sand under the overhanging stems, investigating every twig, nook, and cranny, looking for all the world like some desert mouse. Nor is it confined to the desert plain, as I have found it equally at home in the *Sueda* bushes on the mud-flats above average high-water mark and also up in the dreary limestone hills of the Khirthar at 1800 ft., where Day also noted it at 3000 ft. Where found it is not rare, but also it cannot be said to be very common. Hume called it one of the very commonest birds in the more barren portions of Upper Sind, but it may well be so without being numerically abundant, and such a statement is apt to give rather an exaggerated view of its status; in my experience two or three in an afternoon's trek in suitable country is an average number. It is a very difficult bird to flush from the larger bushes, and when on the wing, its rufous tail at once catches the eye ere it dives in among the roots of the next bush.

The Desert-Warbler is a winter visitor to Sind; the earliest date on which I have seen it is 15 September, and the latest 2 March, and these dates probably do roughly represent its times of arrival and departure. Doig (S. F. ix. p. 278) gave a list of birds found breeding, or thought to breed, in the E. Narra District, and amongst them is "*S. nana* . . . . September"; on p. 280 he adds: "on November 13th, while visiting the Allah Bund in the Rann of Cutch, I found the young of this species just able to fly." This is all the evidence he has published about the breeding of this Warbler in Sind; what his remark "September" refers to is not clear, but I think he meant that, finding young on the wing in November, he deduced that it bred in September. However, I am sure that Doig

was misled in some way over his observation; I have secured birds in October and November and seen plenty. Those I got showed no sign of recent breeding or having been recently bred; in fact, they were in the slightly worn winter plumage common to all *Sylvia* at that time of year and their organs were quite small; nor have I ever seen it in the hot weather, though I have scoured suitable areas of desert in every month. I can therefore confidently assert that this Warbler is but a non-breeding visitor to Sind, a conclusion which Butler (who worked with Doig) also came to.

Ten skins, October to February: ♂, wing 58–60; ♀, 54·5–57·5 mm. Iris pale gold; legs and toes straw-yellow; bill brown above, yellowish below. Wear makes the upper parts less isabelline and more greyish.

Sylvia althæa Hume.

I did not meet with Hume's Whitethroat in Sind, and Hume never specifically stated that he met with it there. At the time of his tour (1872) he had not separated it, though he recognized that three sizes of Whitethroat existed in the plains in winter. In 1878, in reviewing again his Whitethroats, he separated this species and said it was a rare bird, and that he only had five specimens in his collection, and none of these was from Sind. The next year, however, in an editorial comment on Butler's paper in 'Stray Feathers,' he says that *althæa* should be admitted to the Sind fauna. There are no specimens in the British Museum from Sind.

This species breeds in north Beluchistan, and occurs sparingly in the plains of the Punjab, and so should occur also in our province.

Sylvia curruca affinis Blyth.

The Indian Lesser Whitethroat is one of the commonest of the smaller migrants which visit Sind in winter. Everywhere in the forest area it is abundant, and almost every leafy acacia "babool" seems to hold one. In the more desert parts it is naturally scarcer, and its distribution there may be said to be roughly in proportion to the number of acacias. It is

not a bird of scrub-jungle, being replaced there by *minula*, and does not care for low bushes. I have nearly always found it searching for insects pretty high up in trees in a Phylloscopine way, and it is an adept at concealment. It arrives in Lower Sind about the third week in September and soon becomes common; it leaves again early in April; the last was seen on the 14th. Its call note reminded me of that of the Blue Tit.

9 males measure: wing 64–70; tail 56–62; bill at base 12–13·5 mm.

5 females measure: wing 61·5–67; tail 55–61; bill at base 11–13 mm.

The second primary is constantly between the sixth and seventh in length. Spring moult takes place in February and March, and involves the body-feathers, inner two or three secondaries and their coverts, some median and lesser coverts, and the central pair of tail-feathers; sometimes the two central pairs of tail-feathers or the outer pair are also moulted, and in one specimen practically the whole wing, including nearly all the flight-feathers, had been renewed.

Sylvia curruca minula Hume.

Hume's Lesser Whitethroat is not uncommon throughout Sind, but affects, as also noted by Brooks, quite different country from that in which *affinis* is so common—that is, almost desert country, where a few stunted, bare bushes of acacia, camel-thorn, etc., mixed with the more frequent euphorbias, comprise a sort of scanty scrub-jungle; out of this type of country I never met with it, though this sort of habitat may border on cultivation.

The earliest I have seen it is 13 October, and it appears to depart in March. This bird moults in February and March its body plumage, central tail-feathers, inner secondaries and their coverts, but the new dress does not differ from that of fresh autumn. The wing formula is very constant, 2 is between 7 and 8, occasionally equal to 7 or 8. A large series give the following measurements:—♂, wing 60–64; tail 53–56; bill 11–12 mm. ♀ as ♂.

Phylloscopus collybita tristis Blyth.

The Siberian Chiffchaff is an exceedingly common winter visitor throughout the province wherever trees in leaf or cultivation exist; in the drier scrub-jungle it is scarce. Within these limits it may be said to be quite the commonest Warbler and one of the commonest small birds. Few forms of vegetation come amiss, but it is particularly partial to cotton bushes, "babools," tamarisk, "brinjals," red pepper, and the edges of lucerne fields, while I have seen it busily catching flies out in reed-beds on the Manchar Lake over a mile from land. Besides being met with singly, little parties up to half-a-dozen may be seen, while hedges along the side of a lucerne field may be full of them working to and from the crops.

These birds arrive in the first week of October, and most of them have gone by the last week in March; the last seen in Lower Sind was on 4 April. My specimens, together with those obtained in the Punjab by Mr. H. Whistler, form a very large series, obtained in practically every week from mid-October to mid-April. The following are the measurements:—♂, wing 61–64·5; tail 51–56 mm. ♀, wing 53·5–60; tail 45–52 mm. In about half the second primary equals the eighth, and in about half it is between the seventh and eighth; exceptionally it equals the seventh or between the eighth and ninth. The first primary exceeds the primary-coverts by 6–9 mm. (*cf.* Pract. Hdbk. Brit. Birds, p. 303).

The spring moult (end of January to mid-March) involves the body plumage, innermost secondaries and the adjacent coverts, and usually the central pair of tail-feathers. I find no evidence whatever of a complete moult of the wings and tail (*cf. tom. cit.* pp. 299, 303).

Phylloscopus collybita sindianus Brooks.

In 1879 Brooks described (S. F. viii. pp. 467–8) this Chiffchaff from specimens he obtained at Sukkur in north Sind. Since that date there there have been no further records of this little bird in India. Brooks, who evidently had an extraordinarily good ear for birds' notes, first spotted his new

Phylloscopus by its call note being different from that of the familiar *tristis* ; he describes it as a loud, clear shrill "tis-yip" ; he found it fairly common in tamarisk-jungle, 10 to 15 feet high, both at Sukkur and on the canal at Sehwan, which communicates with Manchar Lake. Mr. Bell informs me that he has found *sindianus* common in Upper Sind round Larkhana, and from Sukkur north to the frontier in tamarisk and other trees, and he also noted a difference in the call note from that of *tristis*.

I met with the Sind Willow-Warbler in December 1918 at Jamrao Head, where the Jamrao Canal takes off from the E. Narra. Here the surrounding jungle is liable to inundation, and tamarisk- and acacia-trees grow luxuriantly. Early in the morning, before the dew is off the tall tamarisks, I found this *Phylloscopus* hunting in small parties of two or three birds in a very active and lively manner ; as soon as the day began to warm up and the dew was absorbed, they appeared to affect more the shady acacias in the vicinity. I was unable to hear its notes, and I could detect no difference in habits to *tristis*, except that I never saw this bird fly-catching or affecting herbage by water as *tristis* often does. It was, I think, the commonest of its tribe at Jamrao, but one could obtain it, *neglectus* and *tristis* in the same tree, though the latter was comparatively scarce. At Sukkur in a similar sort of place—tamarisks in damp ground (indeed the precise locality in which Brooks discovered it !)—I also met with it. In Lower Sind I never found it, and it looks as if it was confined in winter to the high tamarisk-jungles which are more frequent in Upper and Central Sind. Elsewhere in India it has so far not been met with, though I have already recorded it from Mesopotamia (J. B. N. H. S. xxviii. 1922, p. 385). It is apparently a winter visitor to Sind.

To Brooks's excellent original description I have little to add. I obtained a fair series (eleven) in December ; the absence of any greenish tinge on the edges of wings, tail, and on the upper parts, and the paler yellow of the under wing-coverts and axillaries are distinctive characters ; also it is on an average a trifle smaller than *tristis*. The wings measure :

♂, 57·5–64·5; ♀, 53–57 mm.: tail: ♂, 47–55; ♀, 46–55 mm. Also the wing formula is slightly different—the second primary is equal to the ninth or tenth or is between these two, occasionally between the eighth and ninth. Brooks laid stress on the shape and length of the first primary; this varies in both *sindianus* and *tristis*, but in *sindianus* on the average it is longer, it exceeds the primary-coverts by 8·5–10·5 mm. (in *tristis* 6–9 mm.). In this and the wing formula, and somewhat in the coloration, this bird resembles *neglectus*, but it is altogether longer in wing and tail, the measurements not overlapping.

Phylloscopus neglectus neglectus Hume.

Hume found the Plain Willow-Wren "not uncommon along the banks of the Indus and throughout Upper Sind wherever thick clumps of 'babool' (*Acacia*) are met with." He found it a very silent and skulking little bird. Brooks, a few years later, also found it not uncommon at Sukkur in tamarisk-jungle by the river, and met with it again in "babool" jungle at Sehwan; he thought that its notes and actions were more like those of the Indian Lesser Whitethroat (*Sylvia c. affinis*) than Phylloscopine. Mr. Bell found this Willow-Wren "everywhere" in central Sind, chiefly in tamarisk-jungle, and he says it has two notes—an ordinary feeding call note "twissa-twissa," uttered quickly at intervals, and an alarm note "tshak-tshak."

I found it in December to be the commonest *Phylloscopus* at Sukkur, frequenting close-growing tamarisks of no great age situated in damp ground by backwaters of the Indus; in dry situations I found none. At Jamrao Head, on the E. Narra, I also found it fairly common in exactly similar situations, and also in "babools" growing in the vicinity of tamarisk-jungle. I unfortunately could not hear its notes, but can confirm its restless activity, and it appeared to me quite Phylloscopine in its habits. I met with it singly or in twos or threes in the same tree busily feeding, and sometimes *Phylloscopus sindianus* might be associated with it. Blanford obtained one at the Gaj River at the foot of the Khirthar,

but in Lower Sind I never met with it for certain, though I thought I once caught a glimpse of one in a small tamarisk-jungle near Karachi; it probably, however, does occur wherever damp tamarisk-jungle is found, but no doubt a large tract of Lower Sind is unsuited to its requirements.

I have no information concerning its times of arrival and departure. Mr. Bell says those he obtained in February showed "unmistakable preparatory signs of breeding," by which I suppose he means that the sexual organs were then beginning to enlarge, which fact is quite normal with all winter visitors to Sind, as I have over and over again verified. From its small size, short tail, and earth-grey colour this bird is unmistakable in the field.

Twelve specimens measure:—♂, wing 51–52·5; tail 40–42. ♀, wing 47·5–50·5; tail 38–42 mm.

Second primary equals ninth or tenth or between these; first primary exceeds primary-coverts by 8–10·5 mm.

Phylloscopus nitidus nitidus Blyth.

The Green Willow-Warbler is a not very common autumn passage migrant; it arrives at the end of the first week in September, and from then a few may be met with until mid-October, and I saw an odd one as late as 9 November. So far as I could make out, it invariably haunts leafy trees, usually "babools," and I never saw it in low bushes and crops, such as *P. c. tristis* frequents. On spring passage I never saw it. This is one of those species whose lines of migration, like those of the Pastor and Black-headed Bunting, have a considerable west and east trend more than north and south. It breeds as far west as the Caucasus, but apparently does not winter in countries lying to the south; nor does it, I think, winter in Sind.

It is worth noting that there are no records of either *Phylloscopus griseolus* or *Phylloscopus humei* in Sind. The former certainly breeds in northern Beluchistan, and must surely pass through Upper Sind on passage; the latter is a common winter visitor to the Lower Punjab, and might be expected to occur in Upper Sind. Hume (S. F. i. p. 197) says of

Ph. occipitalis that he had never obtained it in Sind, but that Capt. Malden had shot it at Jacobabad ; it is not clear that Hume saw Malden's specimen, and I have grave doubts as to the correct determination of this and other birds which Malden informed Hume he had procured in Sind. Mr. Whistler did not meet with this species in the Lower Punjab.

The lines of migration of *viridanus* would seem to lie to the east of Sind.

Of a large series of *nitidus* the measurements are as follows:—♂, wing 62–68 ; tail 45–51. ♀, wing 60–62·5 ; tail 45–46 mm. Second primary between sixth and seventh or equal to the seventh.

Scotocerca inquieta striata (Brooks).

Although Dr. Day, when with Hume, only got the Streaked Scrub-Warbler at Meera (3500 ft.) under Dharyaro, the highest peak of the Khirthar Range, there can be no doubt that it occurs in suitable places throughout the range, and is of course resident. In the lesser hills of Sind, such as the Soorjana and Laki groups, I failed to find this little Warbler, and as Dr. Day did not meet with it under 3500 ft., it probably only occurs in the highest parts of the range ; he obtained his specimens in stunted acacias on 16 January. In other parts where I have met this species it frequents bare rocky hill-slopes, where a few plants or small bushes afford it hunting-ground for its food : it is exceedingly active and a very quick runner. It is found throughout suitable hills in Beluchistan, N. W. Frontier Province, and the Salt Range.

Cettia cetti cettioides Hume.

Hume found the Eastern Cetti's Warbler common in one or two of the "dhands" of the Larkhana District, notably at Dost Allee. He describes it as an inveterate skulker, haunting tamarisk and tiger-grass where these stand thick and dense in swamp and water ; never flying or showing up, it creeps about in very thick cover, from which he found it was impossible to dislodge it. It was long before I met this species

myself in Sind: none of the various "dhands" I visited seemed to be suited to its requirements in the way of dense cover; ultimately I succeeded in finding it on the great Manchar Lake: I was beating out some high, thick rushes on the edge of a drying-up ditch for whatever it might contain, when I flushed a Cetti's Warbler. It soon settled again in the rush, and I was able to watch it creeping about or, rather, catch glimpses of it before I finally secured it: and it appeared to me to be less skulking than I anticipated—less so than *Locustella straminea*, which was in the same rushy margin. The very dark brown colour and the long, rounded tail are the diagnostic features in the field. I have no doubt that in suitable places on the Manchar it is common, but I do not think it is to be found in ordinary reed-beds, which prevail in the part I was in. My specimen was obtained on 20 December, and Hume got his about 8 January; it is probably a winter visitor.

A series from Sind (topotypes) measure:—Wings: ♂, 68·5–73; ♀, 60–63·5 mm.

Suya crinigera striatula (Hume).

Resident in the Khirthar Range, the Long-tailed Hill-Warbler is apparently not very uncommon in suitable places, though probably local. Thus both Day and Hume failed to find it; Blanford obtained the type at Kand, a border post in the hills about 40 miles north of Karachi, and got others at Mandtal, Dharyaro, and Sita Nai—all in the Larkhana District. It was long before I came across it, and then only a single bird in the pass of the Soorjana close to the pool. I searched there and the Laki Hills in vain for it, but at the time everything was very dried up, and probably if the hill-grass fails, it scatters out to any suitable cover it may find.

Hume was so struck by the distinctness of the Sind bird that he made it not only a new species, but actually created for it a new genus!—a procedure, adopted by so conservative an ornithologist, which should be instructive to those who even at this day scout at geographical races, for the Sind bird is only a race of the Himalayan one. The type and five others

examined differ from *S. c. crinigera* in the same (winter) plumage in having the ground-colour above paler, less warm brown, more grey-brown, and the light streaks also paler; edges of wings less deep rufous; under tail-coverts and flanks paler. Other examples of *striatula* examined are from Kelat, N.W. Frontier Province, and Salt Range.

Prinia gracilis lepida (Blyth).

The Streaked Wren-Warbler is locally common throughout the province; it particularly affects tamarisk-jungle, and is not uncommon in reeds and thick herbage round jheels, in "khan" grass-jungle, and I have also seen it in cotton-fields: it is by no means a bird of dry situations, such as desert scrub-jungle etc., where *P. inornata* may be found.

The breeding season is very prolonged; Doig gives it as March to September, and this is, I think, about correct. Mr. Bell says that he has found nests by 25 March, and by the end of April, while others yet have eggs, young may be on the wing, which I can also confirm. Several broods would seem to be reared, as he has found nests as late as 2 August with eggs. Doig gives the normal clutch as four, and Mr. Bell records up to five eggs in a nest: he notes that the nests of well-known ovoid shape are usually situated in the bushier ends of tamarisk boughs, but sometimes in "khan" grass clumps in jungle. The nests are composed of fine grass and fibre interwoven with cobwebs, vegetable-down such as that of "khan," poplar, tamarisk, with spiders' cocoons worked in and lined with similar vegetable downs. The nests measure 100 × 75 mm. externally. Besides the shrill twittering so often heard, these birds make a snapping noise with the bill.

Sind birds are topotypical, and measure:—♂, wing 43–45; tail (winter) 68–71; tail (summer) 59–61 mm. ♀, wing 40·5–43; tail (winter) 68–71; tail (summer) 54–56 mm.

The juvenile has a complete moult, and the spring moult in February and March involves body-feathers, tertials, and tail, but apparently not the rest of the wings. I think it

likely that this bird breeds in the year of hatching, as is the case with *Urolonclia malabarica* and perhaps *Prinia flaviventris*, *Laticilla burnesi*, etc., as I obtained a bird on 2 July in juvenile plumage with testes considerably enlarged; it would be interesting to know, if they breed, whether they moult first into adult dress. It is possible that the late nestings of species with a prolonged breeding season refer to early hatched birds; this is a point which requires further study.

Prinia flaviventris sindiana Ticeh.

The Yellow-vented Wren-Warbler is a very local bird in Sind: it is essentially a bird of tamarisk and "khan" grass-jungle, but does not occur apparently everywhere where these conditions obtain. Doig found it tolerably common along the E. Narra Canal, keeping to very thick jungle and not easily seen unless looked for. Here he found nests in the middle of May and at the same time well-grown young on the wing; the normal clutch was four eggs. He gives the nesting season as March, June, and September. Butler met with it in one strip of tamarisk and "khan" grass jungle near Sukkur in February. Almost in the same place—in the Ketishah Forest—Mr. Bell came across it breeding at the end of April; he says, in the notes he has given me, that it nests either in clumps of "khan" grass or in the thicker boughs of tamarisk three to five feet from the ground. The nest, shaped rather like that of the Sun-bird but with the opening right at the top, is composed of thin grass roots and vegetable down and lined with fine grasses; it measures on the outside $6 \times 2\frac{3}{4}$ inches. The alarm note is a plaintive "twee," like that of *P. socialis*; the call note, uttered from the tip of a bare twig, consists of four or five silvery notes uttered in quick succession, and may be syllablized as "twuddle-li-li"—quite unlike that of *P. lepida*. Although I was in quite suitable country on the E. Narra and elsewhere, including a forest close to the Ketishah Forest, I failed to meet with this bird.

In the Bull. B. O. C. xl. 1920, p. 157, I separated the Sind

bird from the typical race from north Bengal, on account of its longer bill and duller green and yellow coloration. The type is one of Butler's Sukkur birds and is in the British Museum; this race extends to the N.W. Frontier Province.

Prinia inornata inornata (Sykes).

The Indian Wren-Warbler is common enough in cultivation and thicker jungle, such as grass and "babool," rather less so in desert scrub-jungle. I never saw it in reed-beds, where *P. lepida* prevails, though I have found it in tamarisk-jungle a haunt favoured by the latter species.

It is well distributed throughout the province, and in Lower Sind, at any rate, it breeds early—at the end of March,—as I have seen young on the wing on 27 April, and young in the nest a fortnight earlier than this; nests may be found into September; one pair I had under observation brought forth three broods, a fresh nest being built each time, and it built, but deserted, a fourth nest. In Sind three types of nest—the globular, canopied, and the long purse—are found; the last always in high grass, was by far the commonest of the three at Karachi, where these birds much favoured the "surpat" grass in the Sewage Farm. These purse-shaped nests were rather longer than the nine inches given in Hume's 'Nest and Eggs,' and the entrance quite at the top; in fact, they resembled much the nests of *Cisticola cursitans* in shape and size, but were more stoutly built of grasses, with cobweb and vegetable-down woven in, and attached to the nearest stems and quite hidden from sight in the clump. Four eggs was the invariable number.

The summer and winter plumage of this bird are so different that it is not surprising that the older writers considered them to represent two species, until Brooks pointed out that all breeding birds were *inornata* and all winter ones *longicaudatus*, and this, on the whole, is correct: yet it is not absolutely so, as I have obtained on 27 April, in full winter dress just beginning to moult, a bird which was feeding young.

This species moults completely twice a year; the spring moult lasts from March to May, and many, at any rate, breed during the moult—a very unusual thing amongst any birds,—and birds moulting to winter may be found from July to November. The juvenile also has a complete moult during this period. The juvenile tail is about the same length as the adult summer tail, and the colour of the plumage about between the colours of summer and winter of adults. The colour of the bill in the breeding season is not entirely black: the base of the lower mandible is always pale—flesh or grey,—and breeding birds may be met with, even with brown bills.

Summer—seven males measure: wing 47·5–53, tail 55–57. Winter—three males: tail 72–80 mm.

Summer—thirteen females measure: wing 46·5–51, tail 49–57. Winter—five females: tail 69–74 mm.

I cannot separate Sind birds from typical *inornata* from the Deccan. Neither *P. socialis* nor *P. sylvatica* occurs in Sind; a race of the former is found in the Lower Punjab and Mt. Aboo, of the latter in Cutch and Mt. Aboo.

[To be continued.]

XXXI.—*Obituary.*

Robert Elliott Harvey.

We learn with regret of the death of Mr. R. E. Harvey, which took place on the 17th of January last at his home in London, as the result of an attack of angina pectoris. Mr. Harvey was born in 1850, and was therefore 72 years old at the time of his death. He was an old Member of Lloyd's, and only became a member of the Union in 1921. Though interested in birds and ornithology he was not an active worker, and so far as we are aware never published anything in regard to our science.

XXXII.—*Notices of recent Ornithological Publications.*

Babault on Indian Birds.

[Recherches Zoologiques dans les provinces centrales de l'Inde et dans les régions occidentales de l'Himalaya. Par Guy Babault. Pp. iv+238; 80 photos, 4 maps. Paris (Plon), 1921. 8vo.]

[Mission Guy Babault dans les provinces centrales de l'Inde dans la région occidentale de l'Himalaya et Ceylan 1914. Résultats scientifiques. Oiseaux par G. Babault. Pp. 1–342; photos, 6 col. pls., 2 maps. Paris, 1920. 4to.]

In these two handsome volumes M. Guy Babault has given us an account of his journey to India, undertaken in the interest of the Museum in Paris, to make collections of the flora and fauna of the far east in 1914. Unfortunately the mission was interfered with by the outbreak of the war, which found M. Babault and his party in Ladak on the Tibet border and prevented him from completing his plans, which included a visit to Ceylon, Java, and Sumatra.

The first of the two volumes contains a general account of M. Babault's travels, the second one is the report on the collection of birds: these are arranged in three groups—those from the Central Provinces, those from the Himalaya, and those obtained during a previous visit to Ceylon. Under each species is given a list of localities, and careful notes on the colours of the soft parts, of the condition of the genital organs, and the contents of the stomach, with other valuable information.

The following are described as novelties:—*Otocorys wellsi* from Rukshu on the Kashmir-Tibetan border, and *Dicæum erythrorhynchus ceylonensis* from Ceylon; while *Scotocichla fuscicapilla babaulti* was described in the Bulletin of the B. O. C. by Mr. T. Wells from specimens in M. Babault's collection.

The coloured plates illustrate the new forms, *Lophophanes rufonuchalis* and *Callacanthis burtoni* Oates, as well as a curious hybrid between *Lanius nigriceps* and *L. erythronotus*; and two excellent maps show in great detail the taken route and localities visited.

M. Babault in his introduction acknowledges the great assistance he has had from Mr. T. Wells of the British Museum, and we may conclude by congratulating the author on the very fine and valuable piece of work he has accomplished and the magnificent form in which it has been presented to the public.

Bangs on Philippine Birds.

[Notes on Philippine Birds collected by Governor W. Cameron Forbes. By Outram Bangs. Bull. Mus. Comp. Zöol. lxv. 1922, pp. 77–84.]

In this short paper Mr. Bangs lists and comments on some of the birds collected by Mr. Forbes, a former Governor of the Philippine Islands, which have been presented by him to the Museum at Harvard. Several new forms are proposed, including one new species—*Zosterops forbesi* from Camiguin Island.

Bangs, Penard, and Kennard's recent papers.

[The name of the eastern Hermit-Thrush. By Outram Bangs and Thomas E. Penard. Auk, xxxviii. 1921, pp. 432–434.]

[Descriptions of six new subspecies of American birds. *Ibid.* Proc. Biol. Soc. Washington, 1921, pp. 89–92.]

[A list of the birds of Jamaica. By Outram Bangs and Frederic H. Kennard in: The Handbook of Jamaica, 1920, pp. 1–18. Kingston (Govt. Printing Office), 1920.]

In the first note, Messrs. Bangs and Penard discuss the name of the common Hermit-Thrush of the eastern United States. They find that the name usually used (*Hylocichla guttata pallasi*) is really a pure synonym of the typical Alaskan race, *Hylocichla g. guttata* (Pallas), and that a new name is required. They propose *H. g. faxoni*, after the late Dr. Walter Faxon, a well-known American ornithologist, who drew their attention to this error in nomenclature.

The second note contains descriptions of new subspecies of *Geranospiza*, *Otus*, *Mecocerculus*, *Nuttalornis*, *Melanotis*, and *Tangara*, from various localities between California and British Guiana.

The last list of the birds of Jamaica was that drawn up by the late Dr. P. L. Sclater (see 'Ibis,' 1910, p. 562). It contained the names of 194 species. The present one contains 219 species and subspecies, of which, however, 26 are doubtful and 3 introduced. Of the others, 81 are winter visitors from the north ; 5 summer visitors only, breeding and migrating south in autumn : 52 are resident breeding-species not confined to the island; and 52 are residents peculiar to the island. Of this last category five are believed to be extinct.

The list gives the scientific and vernacular names and a short account of the status of each form : the nomenclature and classification are based on Ridgway's 'Birds of Middle and North America.' It will undoubtedly prove of great interest to all visitors to and residents in Jamaica.

Bannerman on the Birds of Southern Nigeria.

[The Birds of Southern Nigeria, including a detailed review of the races of species known to occur there. By David A. Bannerman, M.B.E., etc., etc. With Notes on the Topography of the Country, by Robin Kemp and Willoughby P. Lowe. Rev. Zool. Afr. Bruxelles, ix. 1921, pp. 254–426.]

Little has been written on the birds of Southern Nigeria, which occupies the coast-line of the middle of the Gulf of Guinea between the two former German colonies of Togoland and Cameroon. Most students of African birds will have noticed that the species and subspecies of birds inhabiting what are known as Upper and Lower Guinea are frequently different, and it is of considerable interest to find out where these two faunas meet and whether the races intergrade or not. This problem will be largely solved by the study of the birds of Southern Nigeria. The present paper is based primarily on a collection made by Mr. Willoughby Lowe at the Iju waterworks near the town of Lagos in 1920, while the information derived from other collections made by Mr. Robin Kemp in 1905 and Mr. P. A. Talbot, the well-known worker in Anthropology, has been utilized.

The present instalment of the paper contains an account

of the Passerine birds only, leaving the non-Passerine groups until a later date. The work is done very thoroughly and completely, and the races of each species are listed with their distinguishing characters and their ranges. We find only one new race described in the present paper, *Tschagra senegala chadensis*, though a good number have been described in the 'Bulletin,' some as recently as January of this year, so that the paper could not have been published in 1921 as stated on the cover. Authors and editors should be more careful in dating their papers correctly, as a wrong date so often lands us in confusion. Judging by the many misprints, the Belgian printers seem to have found some trouble in setting up a paper in the English language.

Baxter and Rintoul on Scottish Ducks.

[Some Scottish breeding Ducks: their arrival and dispersal. By Evelyn V. Baxter and Leonora Jeffrey Rintoul. Pp. viii + 90. Edinburgh (Oliver and Boyd), 1922. 8vo.]

This little work contains a carefully compiled account of the present and past distribution of nine species of Ducks, which have all greatly increased their breeding-range in Scotland during the last half century. These species are the Gadwall, Wigeon, Shoveler, Pintail, Pochard, Eider, Scoter, Goosander, and Red-breasted Goosander. The accounts of the first four have already appeared in the pages of the 'Scottish Naturalist,' and are here reprinted with additional notes. The great increase in the breeding-range of so many of our native ducks is most satisfactory, and the causes which have contributed to it are discussed in the final chapter. Bird-protection, the depopulation of the country districts of Scotland, the improved facilities for transport which have brought a plentiful supply of cheap food to remote districts, and several minor causes have all contributed to bring about this happy result, and we are much indebted to the authors of this work for the careful way in which they have marshalled all the available records and facts, and traced the lines of advance and dispersal of the different species.

Beebe's new volume of essays.

[The Edge of the Jungle. By William Beebe, Author of 'Jungle Peace,' etc. Pp. 237; with Index and Glossary. London (Witherby), 1922. 8vo. Price 12*s.* 6*d.*]

In the manufacture of books from material previously published, there are at least two methods known among authors. The writer may assemble, under a title indicative of the character or scope of the collection, a series of reprints of articles that he has written for one or more magazines, and publish them *in puribus* — frankly as separates—drawing attention to their source in a foreword, and, it may be, adding to the headings in the table of contents the name of the journals from which they were borrowed. Such an assemblage has often served a most useful purpose, and author, publisher, and reader may feel that the compilation at least makes no pretence to first-hand production. There is, however, a second method of republication that does not make the same appeal, and which, it must be confessed, seems difficult to reconcile with the literary conscience. In this case the writer suppresses entirely the fact that most or all of his work has seen the light of publication, and, while utilizing the essentials of these contributions to periodical literature, so camouflages the whole by re-paragraphing the text, deleting chapter numbers, substituting quotation marks for italics, adding a few illustrations, altering the phraseology of a few sentences (or even by the addition of a few columns of new matter), that the book has all the seeming of a fresh publication. This last plan is, we regret to say, the one chosen by Mr. Beebe.

Whatever opinion may be held as to this policy of lifting one's own goods from the literary counter, it hardly appears necessary to disguise the origin of so many of the chapters in the work under review, if for no other reason than that the 'Atlantic Monthly,' admirable magazine as it is, can rarely be found on the tables of British readers. In any case, those who have not discovered these papers in the periodical just mentioned will be indebted to the author

for even a second-hand acquaintance with what is certainly an interesting recital of the experiences in South America of a naturalist so well-known as the director of the New York Zoological Station in British Guiana. The dozen essays that constitute 'The Edge of the Jungle' are what in scientific parlance one may term "popular," and that is a sufficient reason for not holding the author to strict account (from the zoological standpoint) for statements that might otherwise warrant criticism. Mr. Beebe should also be permitted the license that accompanies the poetic imagination, whose value is, doubtless, greater in purely literary than it is presumed to be in the more prosaic and circumscribed study of systematic faunal life. In spite of language that is frequently involved and obscure, but which one may overlook as an attempt to express in words some of the problems of, let us say, transcendental biology, there are many attractive descriptions of exotic scenes in this collection; and we are glad to find in the series "A Jungle Clearing" and "Sequels," reprinted from the 'Atlantic' for January 1920 and December 1921 respectively. These and most of the other chapters furnish a graphic account of several aspects of wild life in the tropics, and will be read with both pleasure and profit by everyone interested in the abundant flora and fauna of that fascinating region.

Bent on the habits of North American Gulls.

[Life-histories of North American Gulls and Terns. Order Longipennes. By Arthur Cleveland Bent. Bulletin no. 113, Smithsonian Institution. United States National Museum, pp. x+345; 38 col. pls. (eggs); 77 pls. (photos). Washington, 8vo.]

This volume is the second portion of a projected work on the life-history of North American birds, the first part of which, dealing with the Pygopodes (Auks, Loons, and Grebes), was published in 1919 as Bulletin no. 107.

Mr. Bent has been able to secure the assistance of a great many contributors of notes and data, as well as of photographs, and with the help of a considerable body of published matter

has been able to weave a wonderfully complete account of the habits of the Gulls of North America. He himself has also travelled widely over this vast area, and many of the recorded observations and the photographs are contributed by himself. Under each bird are paragraphs on the nesting-habits, eggs, habits of young, plumages, food, general behaviour, voice, food and distribution, and the whole forms a mine of information about the activities of these birds from every point of view.

There are a large number of photographs of nests and eggs and of characteristic scenes, and a large proportion of these were taken by Mr. Bent himself. The eggs of all the species are illustrated by a fine series of coloured plates, apparently prepared and photographed direct from the eggs selected from the collection of the United States National Museum; they are very satisfactory, except that the shadow-shading has rather an artificial appearance.

Chance on the Cuckoo.

[The Cuckoo's Secret. By Edgar Chance, M.B.O.U. Pp. xiv & 239; 9 photos; 2 plans. London (Sedgwick and Jackson), 1922. 8vo. Price 7*s.* 6*d.*]

In this little book the author gives us the result of several years' observation on the manner in which an individual Cuckoo deposited its eggs in the foster-parent's nest. Too high praise can hardly be given to the patient and methodical way in which his observations were carried out, whilst the valuable information so obtained has been recorded in an admirable manner, the author showing how an oologist can work in a scientific manner and for a scientific purpose. It is, perhaps, only when he generalizes on the result of his work that one feels his deductions are drawn from the acts of a single Cuckoo, which has laid its eggs under more or less artificial conditions. Even, however, if the author's new facts are not all quite so new to others as they were to himself, the net result is a very interesting addition to our knowledge of the domestic economy of the Cuckoo and a book which will interest anyone who reads it.

Chapman's recent papers.

[The distribution of the Swallows of the genus *Pygochelidon*, no. 30, pp. 1–16. Descriptions of apparently new birds from Colombia, Ecuador, and Argentine, no. 31, pp. 1–8. By Frank M. Chapman. Amer. Mus. Novit. 1922.]

In the first paper there is an interesting discussion of the relationships and phylogeny of this little group of Neotropical Swallows. Mr. Chapman finds that *P. cyanoleuca* is largely confined to the mountainous area of the subtropical zone of South America, and is not generally distributed as usually stated. *P. p. patagonica* appears to be a species breeding in the southern temperate zone from southern Peru to Patagonia, and visiting farther north. Two new forms are proposed—*P. p. peruviana* from western Peru but not ranging up to high altitudes, and *P. flavipes*, a new and distinct species, but founded on only one example from the Prov. Junin in Peru, at 10,800 ft. elevation.

The second paper contains preliminary descriptions of new species and subspecies of *Zenaida*, *Oreopelia*, *Jacana*, *Rupornis*, *Ciccaba*, *Glaucidium*, and *Grallaricula* from various localities, and is incidental to the preparation of a report on the distribution of bird-life in Ecuador, which we hope shortly to see published.

Finn's Birds of our Country.

[Birds of our Country. By Frank Finn. With about 800 illustrations and numerous coloured plates. Pt. 1, pp. 1–40. London (Hutchinson).]

This is an essentially popular book on British Birds, prepared by Mr. Frank Finn, and profusely illustrated with half-tone reproductions of photographs by various artists. The matter is arranged alphabetically, beginning with the "Accentor, Alpine," and carrying us on in the present part to the "Capercailzie." The pictures do not seem to correspond with the text very accurately, as the photographs of the Capercaillies appear on p. 30, while the text is to be found on p. 40—a bad arrangement, which does not conduce to easy reference. The work will undoubtedly form, when complete, a wonderful storehouse of bird-pictures. There

are two coloured plates in the present number, one of a Hoopoe in flight, another of the eggs of various British Birds.

Grinnell's recent papers.

[Concerning the status of the supposed two races of the Long-billed Curlew. By Joseph Grinnell. Condor, xxiii. 1921, pp. 21–27.]

[A striking case of adventitious coloration. *Id.* Auk, xxxviii. 1921, pp. 129–131.]

[The principle of "rapid peering" in birds. *Id.* Univ. California Chronicle, 1921, pp. 392–396.]

[Some birds of the Yosemite National Park. By J. Grinnell and T. I. Storer, from Hall's Handbook of Yosemite National Park, pp. 133–152; 3 photos. New York (Putnam), 1921.]

The first of these articles sets out to refute the suggested division of the Curlew, *Numenius americanus*, into two subspecific races, advocated by Messrs. Bishop, Oberholser, and Ridgway. Mr. Grinnell certainly seems to show that sufficient evidence has not yet been forthcoming to distinguish two races, although there is much variation in dimensions among these birds, but the material used has been almost entirely taken during migration and not in the breeding-areas.

The second note deals with a pair of Tits (*Bæolophus inornatus*), which the writer obtained near Berkeley in California and which were bright yellow on the underparts. Some suggested a mutation, some a tropical species, but the explanation appears to be staining with the spores of a slime-mould (*Myxomycetes*).

In the third article, Mr. Grinnell discusses two very different types of behaviour in regard to the obtaining of food by birds: the one in which the bird perches or stands and waits for the approach of its prey, such as a Blackbird, a Flycatcher, or a Heron, to take European examples; the other, in which the bird is always in motion, and appears to be of a nervous fidgety temperament, and is always seeking for some stationary objects. Such are the Tits and Golden-crested Wrens. To this latter class, Mr. Grinnell applies the expression "the principle of rapid peering." These

principles are discussed and applied, and lead Mr. Grinnell to the conclusion of the enormous importance of the struggle for existence among birds—a factor in evolution much sneered at by some of our modern writers.

The last item is a little popular sketch of the bird-life of the beautiful Yosemite National Park, one of the glories of California and visited by increasing numbers of tourists and travellers every year.

Grote's translations of Russian Memoirs.

[Aus der ornithologischen Litteratur Russlands. Berichte und Übersetzungen. Von Hermann Grote. Nos. iii., iv., 1921, 1922.]

We have two more numbers of the useful translations of Russian papers prepared by Dr. Grote. The first of these contains an essay on the Avifauna of the Government of Tobolsk in western Siberia, based on the papers published by T. Slowzow, M. Russki, and K. Derjugin between 1892 and 1897, and more recently by W. Uschakov; also another list of the birds of part of the Wologda Government in north-eastern Russia, besides a paper by W. Andrejew and V. Bianchi published in 1910, to which is attached a description of a new race of Sparrow-Hawk (*Accipiter nisus peregrinoides*) by Otto Kleinschmidt, based on a bird obtained at Rositten, but supposed to be a wanderer from western Siberia.

The fourth number is specially dedicated to Prof. Schalow on his 70th birthday, and deals with the researches of N. Sarudny on the birds of the Kisyl-kum desert, a desolate district lying to the east of the sea of Aral, and south of the Syr-Darja and the Amu-Darja rivers. It contains a number of interesting observations on the birds of that region not before available to western ornithologists.

Hartert's Palæarctic Avifauna.

[Die Vögel der paläarktischen Fauna. Von Dr. Ernst Hartert. Heft. xviii.–xix. (Bd. iii. 4–5) pp. 2149–2328 & i–xii. Berlin (Friedländer), March 1922. 8vo.]

With this number Dr. Hartert ends his long labours,

commenced so far back as 1903. In a prefatory note he states that it has been a labour of love, and hopes that his readers will have as much pleasure in reading it as he has had in writing it. The present part contains the additions and corrections from the genus *Sylvia* to the end of the Game-birds. These are naturally much more numerous for the earlier volumes and bring the whole work up to date. There is also a complete and most useful index to all these volumes. We regret to notice some misprints—such as Bannermann (*sic*) on p. 2018, which we fear will not be well received by our members.

The influence that Dr. Hartert and the Vög. pal. Faun. has exercised on the younger generation of workers in systematic ornithology is beyond all question, and this work will remain for all time a monument of his accurate and careful methods. We are sure that all our fellow-members of the Union will join in offering him their warmest congratulations on the completion of his long task.

Lönnberg and Rendahl on the birds of Ecuador.

[A contribution to the ornithology of Ecuador. By Einar Lönnberg and Hialmar Rendahl. Ark. Zool. Stockholm, vol. 14, no. 25, 1922, pp. 1–87.]

The Museum at Stockholm has recently received a considerable collection of birds from Ecuador, formed by Mr. L. Söderström the well-known Swedish Consul at Quito. The collection is a large one, comprising over four hundred different forms of resident birds, all of which were most carefully labelled with exact localities, and also, a most important point in the case of Andean collections, with the exact altitude. The introduction contains a discussion of the zonal distribution of the birds, in which the facts are carefully compared with those obtained by Mr. Chapman in Colombia and more recently in Peru. The tables given bring out very clearly a great difference between the faunas of the eastern and western sides of the Andean range.

Following the introduction is the enumeration of the species and subspecies collected, with some valuable notes

by Consul Söderström and discussions on taxonomy. Nine new forms are described as follows:—*Nothocercus plumbeiceps*, *Odontophorus söderströmii*, *Momotus lessoni gualeæ*, *Nyctibius jamaicensis griseus*, *Oreotrochilus chimborazo söderströmii*, *Heliothrix auritus major*, *Pseudocolaptes johnsoni*, *Tityra nigriceps gualeæ*, *Iridophanes pulcherrima gualeæ*, *Pyranga rubriceps rufistigmata*.

McGregor and Marshall on Philippine Birds.

[Philippine Birds for boys and girls. By Richard A. McGregor and Elizabeth J. Marshall; with illustrations by Macario Ligaya. Pp. 138; 32 illustr., coloured and plain. Manilla (Bureau of Printing), 1922.]

This little work has been prepared by Mr. McGregor and Mrs. Marshall for the use of the children of the Philippine Islands, and gives a charming account of many of the more characteristic features of the birds of those islands. It will undoubtedly be very useful in creating among the school-children of the Philippines, both native and American, an interest in the varied forms and habits of the birds they see around them. Thirty different species are described, and all are figured either in colour or in black and white. With each bird is a simple description and a little story, illustrating its nesting-habits and other characteristic traits. An appendix gives the scientific name and a succinct note on the status of each species. The coloured plates reflect great credit on Mr. Ligaya, who, we suppose, is a Philippino artist.

Mathews on Australian Birds.

[The Birds of Australia. By Gregory M. Mathews. Vol. ix. pt. 7, pp. 305–360, pls. 437–442. London (Witherby), Apl. 1922. 4to.]

The plains of Australia are so peculiarly suited to ground-birds that it is not astonishing that we are still occupied with them in this part. The Rufous Song-Lark, which was generically separated by the author as *Maclennania*, is now specifically known as *mathewsi* instead of *rufescens* (pre-occupied), and we are given the generic distinction in full again. Incidentally we are told that *Cinclorhamphus* is a

combination of Latin and Greek roots; but this is a mistaken idea, both roots being Greek.

All these ground-species have most interesting habits, which cannot be detailed here, while not the least important is the Ground-Thrush (*Oreocincla lunata*) named by Latham from the Watling drawings, but subsequently confounded with *O. varia* of Japan. Only one species is now recognized, those formerly proposed being reduced to subspecies, which are invariably inhabitants of damp hill-gullies, and hardly fly at all.

The next genus, *Ephthianura*, is divided into four by Mr. Mathews, each containing a single species of very distinct coloration. Hence we have *E. albifrons*, *Parephthianura tricolor*, *Aurephthianura aurifrons*, and *Leachena crocea*, a set of birds with habits like those of Chats or even Robins, but different notes. The position of this group is very doubtful, but it is an error to place it with *Acanthiza*.

In 1910 was discovered the rare Desert Chat, a denizen of the stony Central Australian table-land. The discoverer, Mr. Love, sent it to Mr. Ashby, who described it as *Ephthianura lovensis*, but North separated it generically as *Ashbyia*. The first examples had strayed to South Australia, but the nest and eggs came from the interior, where they were found by Mr. Waite of Capt. White's Expedition. The part ends with the well-known Australian Reed-Warbler, where we notice that Billberg's *Conopoderus* is substituted for *Acrocephalus* of most authors.

The subspecies in pt. 7 are given as in the author's former lists, but with considerable hesitation in some cases.

Riley's recent papers.

[A new *Dryonastes* from Szechuen, China, pp. 59–60. On *Chlorospingus goeringi* Sclater & Salvin, pp. 61–62. An additional note on the name of the Inca Tern, p. 77. Note on a rare Paroquet from Venezuela, p. 77. Note on *Anas arcuata* Horsfield, p. 78. By J. H. Riley. Proc. Biol. Soc. Washington, vol. 35, 1922.]

In the first note, *Dryonastes grahami*, a very distinct new Laughing Thrush from Mt. Omei in Szechuan, is described.

In the second note, *Chlorospingus goeringi* is made the type of a new genus, *Orospingus*. The third note draws attention to the fact that the generic name of the Inca Tern is *Noddi* Desmurs vice *Inca* Jardine preoccupied. The rare Parrot is one from Venezuela, founded by Ridgway on some trade-skins from an unknown locality, and named *Grammopsittaca lineola maculata*. The correct name is apparently *Bolborhynchus lineolus tigrinus* (Souancé). In the last note Mr. Riley controverts Mr. Mathews' and Dr. Oberholser's rejection of the name *Anas arcuata* Horsfield for the well-known Whistling Teal.

Rothschild on the name of a Parrot.

[On the names of certain Parrots of the genus *Larius* Bodd.=*Eclectus* Wagl. By Lord Rothschild, F.R.S. Ann. Mag. Nat. Hist. (9) ix. 1922, p. 411.]

Lord Rothschild finds that the Red and Green Eclectus Parrot, called *roratus* by P. L. S. Müller, is founded on descriptions of a bird by Vosmaer said to have come from Ceylon, but Müller gives Amboina in the southern Moluccas. Salvadori, however, passed the name over to the bird from the northern Moluccas. In this action Lord Rothschild argues that he is wrong and Müller's name must be retained for the southern Molucca bird, while the northern one requires a new one. Lord Rothschild proposes to call it *Larius roratus vosmaeri*. It appears that *Larius* Bodd. (probably a misprint for *Lorius*) must be used instead of the better-known *Eclectus* for this group of birds.

Sherborn's Index Animalium.

[Index Animalium sive Index nominum quæ ab A.D. MDCCLVIII. generibus et speciebus animalium imposita sunt societatibus eruditorum adjuvantibus a Carolo Davies Sherborn confectus. Sectio secunda a Kalendis Januariis MDCCCI. usque ad finem Decembris MDCCCL. Part i. Introduction, Bibliography, and Index, A—App. pp. 1–128. London (Trustees Brit. Mus.), 1922. 8vo. Price 20*s*.]

For over thirty years Mr. Sherborn has laboured at the gigantic task of bringing together in one work a list of all the generic and specific names which have been proposed

for animals. The first portion of the work, dealing with names given between the years 1758 and 1800, was published by the Cambridge University Press in 1902, and is well known to all systematic workers as a mine of information about the earlier names in zoology. The present is the first instalment of the second portion of the work as planned, and deals with all the generic and specific names which appeared between 1801 and 1850. The earlier part of Mr. Sherborn's work was carried out with the support of the British Association, with occasional assistance from the Royal Society and the Zoological Society. From 1912 onwards, the Trustees of the British Museum have found the modest sums required to carry on the work, and now it has been completed we may perhaps express our profound gratitude to the compiler, and our appreciation of the enormous amount of labour entailed in the completion of his task.

Following the explanatory introduction is a modest list covering one and a half pages of "libri desiderati"—works which Mr. Sherborn has been unable himself to consult; and then follows the bibliography of the works which he has been able to consult, occupying one hundred and seventeen pages. This is one of the most valuable parts of the work, as the dates of publication have been most carefully investigated and are given often with short but very useful comments. Finally, a commencement is made with the Index itself. In this the generic and specific names are arranged alphabetically with full reference and date of publication.

The work is very well printed by the Cambridge University Press for the Trustees of the Museum and is singularly clear and easy to read, and should find a place on the book-shelf of every worker in Systematic Zoology.

Swann on the Accipitres.

[A Synopsis of the Accipitres (Diurnal Birds of Prey). 2nd ed. revised and corrected throughout, pp. viii+233. London (Wheldon & Wesley), 1921–1922. 8vo. 4 pts., at 6*s.* each.]

The second edition of Mr. Swann's work on the Accipitres

is now completed. It contains a great deal of additional matter, as it consists of 233 pages against 164 and many corrections and improvements, and will undoubtedly prove of great use to all systematic workers, and especially to students of the Birds of Prey. The type-species of the genera are now given and the type-localities of the species, both of which greatly increase the usefulness of the work. There are a good number of new subspecies described in the Synopsis itself, in addition to those recently proposed in the 'Auk' and the Bull. B. O. C., to which attention should be directed. We notice the Desert Buzzard, formerly known as *Buteo desertorum*—so common in Africa in winter, now stands as *B. vulpinus vulpinus* Gloger, and is regarded as a distinct species from *B. buteo buteo,* while the curious forest Buzzard of eastern Europe becomes *B. v. intermedius* Menz. *vice B. zimmermannæ* Ehm.

Swarth on a new race of the Dusky Grouse.

[The Sitkan race of the Dusky Grouse. By H. G. Swarth. Condor, xxiii. 1921, pp. 59–60.]

The hen of the Dusky Grouse of south-eastern Alaska differs from that of Vancouver Island and farther south in its more pronounced reddish tinge, and Mr. Swarth proposes to name it *Dendragapus obscurus sitkensis,* subsp. n. In the male sex the difference from *D. o. fuliginosus* is inappreciable.

Todd on the Tyrannidæ.

[Studies in the Tyrannidæ. II. The restricted genus *Myiobius.* By W. E. Clyde Todd. Proc. Biol. Soc. Washington, vol. 35, 1922, pp. 17–38.]

This, the second essay of the author on the Tyrant-birds, deals with the South American genus *Myiobius.* There is a careful revision of the species and subspecies—the former seven, the latter four in number—one of which, *M. villosus peruvianus,* is new. In most cases the material on which the revision is based is extensive, and the work will doubtless be most useful to all students of Neotropical birds.

Tollenaar on egg-laying in wild birds.

[Legperioden en eierproductie bij eenige wilde vogelsoorten, vergeleken met die bij hoenderrassen door D. Tollenaar. Med. Landbouwhoogeschool, Wageningen, vol. 23, pt. 2, pp. 1–46, 1922.]

In this paper, published by the Dutch Agricultural School, an attempt is made to deal with the factors that assist or retard the laying of eggs by wild birds, working with the same methods so successfully applied, chiefly in the United States, by Prof. Pearl and others to egg-production in the domestic fowl. The chief factor dealt with is the weather, not only in its direct effect on wild birds, but also in its indirect effect through its influence on insect-life, which is so important in the rearing of the broods of even the hard-billed birds.

Most of the observations were made on Tits, Redstarts, and Thrushes, and are shown plotted down on diagrams. At the end of the paper, which is written in Dutch, is an English *résumé* to enable foreign readers to follow the argument.

Van Oordt on Spitsbergen birds.

[Ornithological notes from Spitsbergen and northern Scandinavia, 1921. By Dr. G. J. van Oordt. With 1 text-figure and 4 plates. Ardea, x. 1921, pp. 129–170.]

It will be remembered that Mr. Jourdain and his party when they went to Spitsbergen last year met a Dutch ornithologist engaged in a similar mission, and that they were able to be of mutual assistance to one another. Dr. van Oordt, the Dutch ornithologist, has now published an account of his journey and a list of the birds he met with, and the eggs and skins he collected on behalf of the Zoological Museum, Amsterdam, and other Dutch museums. Dr. van Oordt spent most of his time at Cape Boheman on the northern side of Ice Fjord, where he was joined by the members of the Oxford Expedition on 12 July, and where he was able to show them the nests of the Phalarope and the King-Eider.

The greater part of the paper is taken up with a systematic

review of the birds (27 species out of 55 recorded) met with and with observations on their nesting and other habits and is illustrated with a number of photographs. Dr. van Oordt left Spitsbergen early in September and, landing at Narvik, travelled overland through Sweden to Stockholm, and he adds some notes on the birds seen by him during this journey.

Van Oort on the Birds of Holland.

[Oologica Neerlandica. De Vogels van Nederland. Door Dr. E. D. van Oort. Pts. 10–12, 30 pls. 's Gravenhage (Nijhoff), 1922. 4to.]

The last part of Dr. van Oort's great work on the birds of Holland contains only plates, no text. These, thirty in number, deal with the Birds of Prey, Game-birds, Shore-birds, Rails, and the Crane, and fully uphold the standard set in the previous parts already noticed (Ibis, 1919, p. 552, and 1922, p. 205).

Wetmore's recent papers.

[Three new birds of the family Tinamidæ from South America. By Alexander Wetmore. Journ. Wash. Acad. Sci. vol. 11, pp. 434–437, 1921.]

[Description of a *Brachyspiza* from the Chaco of Argentine and Paraguay. *Ibid.* Proc. Biol. Soc. Washington, vol. 35, pp. 39–40, 1922.]

[A new genus and four new subspecies of American birds. By Alexander Wetmore and James L. Peters. *Ibid.* pp. 41–46.]

The new Timamous are *Rhynchotus arcanus* from Parana, Argentina, *Nothura maculosa savannarum* from Uruguay, and *Calopezus elegans albidis* from San Juan, Argentina. In the second paper is described *Brachispiza capensis mellea* from Paraguay, and in the third a new genus *Teledromas* allied to *Rhinocrypta* Gray, and new races of *Dendrocygna*, *Colaptes*, *Brachyspiza*, and *Saltator*. The first of these, *Dendrocygna bicolor helva*, is proposed for the North and Central American Tree-Duck, which the authors believe is distinguishable from that inhabiting southern South America and which retains the original name. They do not state their views in regard to the African examples of the species.

Report of the Felstead School Scientific Society.

[Report of the Felstead School Scientific Society for the years 1920 and 1921, pp. 1–46. Chelmsford, 1922. 8vo.]

We are always glad to see the reports of school natural history societies, and there can be no doubt that such societies, when well conducted by a master with a taste for natural history, do a great deal to encourage a love of ornithology. Mr. J. H. Owen, who is a member of our Union, is the President of the Felstead society, and his beautiful photographic work is well known to most of us. In the present issue is an article on photographing the Great Crested Grebe and some notes on the nesting-habits, illustrated by photographs taken on Aston Lake in Shropshire by Mr. Owen. There are also two general reports on the bird-life observed near Felstead in 1919–20 and 1920–21. In this work Mr. Owen seems to have been indebted to many of his pupils for help.

Contents of recent ornithological and other Journals.

Ardea, vol. x. nos. 1–3, 1921.

Blaauw, F. E. Ornithological observations made between Buenos Aires and Santiago.

Swaen, A. E. H. Arrival and departure dates for the Common Swift in Holland.

Reyne, A. On the occurrence of the Cock-of-the-Rock (*Rupicola crocea*) in Surinam (Dutch Guiana).

Sant, L. van 'T. Statistical enquiry on the number of eggs in the clutch in the Blackbird, Song-Thrush, and Missel-Thrush.

Oort, E. D. van. Address on Bird-migration and Bird-ringing; also recent results of the bird-ringing in Holland.

Pellinkhoff, J. H. The Birds of Meppel and its environs.

Bierans de Haan, J. A. An old Journal of R. van Lennep in 1749, with entries of natural history observations.

Oordt, G. J. van. Ornithological notes from Spitsbergen and northern Scandinavia, 1921 (see p. 589).

Beaufort, L. F. de. Account of a collection of birds from N.E. Sumatra made by Dr. de Bussy, containing four species new to Sumatra.

Auk, vol. xxxix. no. 2, April 1922.

Osgood, W. H. Memorial notice of C. B. Cory, with portrait.

Jourdain, F. C. R. The breeding-habits of the Barnacle Goose in Spitsbergen, with a photograph.

Saunders, A. A. Flight-songs and mating-songs.

Daley, M. W. The birds of Frost Valley in the Catskill Mts., New York State.

Kalmbach, E. R. A comparison of the feeding-habits and economics of the Starling in Great Britain and U.S.A., where it has now become abundant.

Chapin, J. P. The function of the œsophagus in the Bittern's booming: an interesting suggestion as to the method by which the Bittern produces his loud note, with illustrations.

Preble, E. A. A memoir of Roderick Ross Macfarlane, 1833–1920, an old factor of the Hudson Bay Company, who did much to extend our knowledge of the geography and fauna of the northern part of the North-American Continent.

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——. The Japanese Starling (*Acridotheres cristatellus*) naturalized in Vancouver, British Columbia.

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Emu, vol. xxi. pt. 3, Jan. 1922.

Campbell, A. J. *Cinclosoma alisteri* (Mathews), the Black-throated Ground-bird, with coloured plate.

White, H. L. Two new subspecies—*Gymnorhina tibicen eylandtensis* from Northern Territory, and *Geophaps scripta peninsulæ* from Cape York Peninsula.

——. Descriptions of new nests and eggs; also abnormal and curious combination clutches.

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Oologists' Record, vol. ii. no. 1, Mch. 1922.

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Schweppenburg, H. Frh. Geyr von. Note on the definition of a subspecies.

Weigold, H. *Muscicapa (Alseonax) muthei stotzneri* and *Brachypteryx nipalensis harteri*, new subspecies from China described.

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Millet-Horsin, Dr. Guide for bird-lovers arriving in French West Africa.

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White, S. A. Description of *Acanthiza chrysorrhoa* — Yellow-rumped Tit.

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Nibe, J. Anomalies of egg-marking.

Hachisuka, M. Pheasants in Britain, with a plate.

XXXIII.—*Letters, Extracts, and Notes.*

The Hermit Ibis in the Sudan.

Sir,—On the 11th of February, 1922, when about six to eight miles south of Singa on the Blue Nile, I saw several hundred, perhaps over one thousand in all, individuals of this species (*Comatibis eremita*). I shot one, a male; the skin is now in the Giza Zoological Museum.

This is only the third occasion on which I have met the Hermit Ibis in the Sudan. The large number of individuals appears worthy of being recorded.

A few dozen Sacred Ibis (*Threskiornis æthiopica*) were with the great crowds of Hermit Ibis.

S. S. Flower,
Major.

El Giza, Egypt.
9 March, 1922.

Sudan Doves.

Sir,—In 'The Ibis,' 1920, p. 831, Messrs. Sclater & Mackworth-Praed, when discussing *Streptopelia turtur turtur*, state that it seems probable that *Streptopelia t. arenicola* may also occur in the Sudan. It is therefore interesting to record that we have recently received a typical example of *Streptopelia turtur arenicola* collected by Major Flower near Sennar, Blue Nile, on 14 February, 1922. It is an adult female.

Yours etc.,
Michael J. Nicoll.

El Giza, Egypt.
5 March, 1922.

Sense of smell possessed by Birds.

Sir,—Referring to Mr. Gurney's paper in the last 'Ibis,' a few years ago at Moyles Court, Ringwood, we had evidence of a remarkably keen sense of smell in Pheasants.

Three old cocks and a hen from the coverts surrounding the garden, removed and ate hundreds of crocus bulbs buried some three or four inches deep; this occurred in the month of August, when all vegetative organs of crocuses have died off and disappeared.

There was no disturbance of the soil to find the bulbs, just a neat perpendicular hole immediately above each bulb.

To man a crocus bulb has no scent whatever. The Pheasant must possess a very highly specialised olfactory nerve.

Yours faithfully,
Rose Haig Thomas, F.L.S.

13 Arlington Street, S.W. 1.
14 May, 1922.

Wild Bird Protection.

The following letter appeared in the 'Times' of April 10 last :—

Sir,—In consequence of the exhibition of some clutches of wild birds' eggs at the last Oological dinner, Lord Buxton, at the annual meeting of the Royal Society for the Protection of Birds, drew public attention to the action of certain oologists as constituting a distinct menace to the effective protection of wild birds and to the due enforcement of the laws passed for their protection. Lord Buxton forwarded a copy of his speech to the British Ornithologists' Union for their observations.

In the first place, the committee of the B.O.U. would point out that the Oological dinners are not held under the auspices of the British Ornithologists' Union, nor are those who attend or exhibit necessarily members either of the B.O. Union or the B.O. Club. In view, however, of the public interest in the question of the protection of wild birds and of their eggs, the committee of the B.O.U. desire publicly to state (as they have already assured Lord Buxton) :—

(1) That they are desirous of encouraging the protection of rare birds in England in every way possible;

(2) That it is their ambition to limit the collecting of eggs to the taking of such as are required in the interests of science, and they specially protest against the taking of eggs of any birds in any locality where they are rare, or the taking of eggs in unnecessary numbers;

(3) That it is their emphatic desire to support, both in letter and in spirit, the Acts which provide for the protection of birds and their eggs, and they deprecate very strongly the action of any member who disobeys these laws, or who incites any other to break or evade them.

We are, Sir, yours faithfully,

H. J. Elwes,
President, B.O.U.

E. C. Stuart Baker,
Hon. Secretary, B.O.U.

British Ornithologists' Union,
6 Harold Place, Upper Norwood,
S.E. 19.

The position of the Union in regard to protection and conservation of bird-life has been the subject of discussion by the Committee of the Union on several occasions recently.

The Committee desire to appeal to all members of the Union to assist them in carrying out the principles laid down in the letter as printed above, and they ask all collectors, either of bird-skins or birds' eggs, to refrain from collecting long series of rare species, the amassing of which may contribute to the extinction of those species as British Birds. The Committee also desire to protest most strongly against the custom of some collectors of bribing keepers and other employees of landowners to procure for them rare birds and eggs. Such conduct can only bring the Union into disrepute.

Many members of the Union have urged the Committee to take action against members who have, or are said to have, committed offences dealt with under Rule 8 of the Union. As, however, the Committee have to act as judge and jury in such cases and to decide on the evidence whether the offence has been committed or not, it does not appear to be possible for the Committee as a body to take action, although there is nothing to prevent any individual member of the Committee from so doing. The whole procedure in regard to such cases is laid down in Rule 8, and any accusation against a member made under that rule should be addressed to the Honorary Secretary, who will place it before the Committee at the earliest moment.

For the convenience of Members who have not a copy of the rules by them, Rule 8 is reprinted here as follows:—

> If, in the opinion of the Committee, any Member shall have acted in a manner injurious to the interests or good name of the Union, or his Membership shall have become undesirable, or he shall have personally assisted in or connived at the capture or destruction of any bird, nest, or egg in the British Isles, by purchase or otherwise, likely, in the opinion of the Committee, to lead to the extermination or serious diminution of that species as a British bird, the Secretary shall be directed to send, whenever

possible, a registered letter to that Member, stating the nature of the offence of which he is accused, together with the name of the informant, or the source of information, and asking for an explanation of the same. After allowing a reasonable time (not less than a clear fortnight after the receipt of the Secretary's letter) for reply or for appearing in person before the Committee if he so desire, the Committee, providing not less than four are agreed, shall have power to remove the gentleman's name from the List of Members. Such Member may, if he so desire, stand for re-election by Ballot at the next Annual General Meeting, and in the event of his re-election no fee for re-admission shall be required.

Plumage Bill.

The Board of Trade send the following announcement :—

By virtue of the Importation of Plumage (No. 2) Order, 1922, the names of certain birds (which are set out below) have been added to the Schedule to the Importation of Plumage (Prohibition) Act, 1921, and their plumage can therefore be imported into the United Kingdom without special licence :—

> The Common Jay ; the Common Magpie ; the Common Starling ; the Java Sparrow ; the West African Ring-necked Parrakeet ; the Chinese Bustard ; the Green (or Japanese) Pheasant ; the Copper Pheasant ; and the Golden Pheasant.

The Advisory Committee appointed under the Act, in recommending the addition of the names of the three last-mentioned birds to the Schedule, further recommended that the matter should be referred to them again for review after the expiration of twelve months.

The Board of Trade accordingly desire it to be known that the addition of these birds is provisional, and that the question of their continued inclusion will be referred again to the Committee for consideration twelve months hence.

Board of Trade,
12th June, 1922.

Ringed Tern in South Africa.

From the Report of the South African Museum at Capetown for 1921, we extract the following item:—"An interesting addition has been that of an example of the European Common Tern, *Sterna fluviatilis*, ringed in Sweden (Göteborg Museum), and shot at the Berg River, Cape Prov. on the 24th of December, 1921. The bird turns out to have been ringed in 1913 and was thus nine years old. The species is not uncommon in Table Bay at the non-breeding season."

Personalia.

Dr. E. Hartert has recently returned from Cyrenaica (Tripoli), where he has been spending a few weeks collecting for the Tring Museum.

Rear-Admiral H. Lynes, C.B., and Mr. Willoughby Lowe returned home from Darfur in May last, bringing with them very extensive collections in every branch of Natural History, including a fine series of bird-skins. We hope to publish a report on these before very long. We also offer our congratulations to Admiral Lynes on his promotion to Flag-rank.

We learn that Dr. C. E. Hellmayr, of Munich, has been appointed Associate-Curator of the division of birds in the Field Museum of Natural History at Chicago, and will take up his appointment this autumn.

Capt. S. A. White, who has already done much exploration work in South Australia, is engaged on a journey across the Australian continent from north to south by a new and hitherto unexplored route.

A good many ornithologists from overseas have recently been paying a visit to England. Among them may be mentioned Dr. Jonathan Dwight of New York, a Fellow of the

American Ornithologists' Union, and Dr. John C. Phillips of Wenham, Mass. The last-named is preparing a new work on the Ducks of the World, and spent some days in the Natural History Museum examining the collections. Dr. Dwight is specially interested in the plumage development of the Gulls, and has also devoted some time to the Museum collections. A third visitor is Mr. T. Gilbert Pearson, the President of the National Association of the Audubon Societies, who has been enquiring into bird-conservation in Europe, and who has addressed both the B. O. Club and the Royal Society for the Protection of Birds on this question. From Australia we welcome Mr. E. Ashby and Mr. C. L. E. Orton, both members of the Royal Australian Ornithologists' Union.

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XXXIV.—*The Birds of Sind.* (Part ii.)

By CLAUD B. TICEHURST, M.D., M.A., M.B.O.U., late Capt. R.A.M.C.*

Lanius excubitor lahtora (Sykes).

Common and resident; avoiding better cultivated and swampy parts, also forest, the Great Grey Shrike is a true denizen of the desert, and may be found anywhere where a few scattered bushes or euphorbia supply it with a perch. Each bird seems to have its own beat, and resents intrusion from its own and other species. The chief food appears to be beetles and lizards, though doubtless young birds do not come amiss, and Mr. Bell says that the large ant, *Myrmecocystus laevis*, is eagerly taken. The only larder I came across consisted of a lizard's head stuck on a thorn of a euphorbia. Nesting begins at the end of February, and the nest is often placed in the top of a euphorbia.

A series measure: wing 110–117, tail 117–129 mm. in adults.

The black frontal line is always present, 4–5 mm. wide, narrower in first winter plumage: the black lesser wing-coverts are slightly tipped with grey, especially on the carpus, but usually less than in *pallidirostris*.

* For Part i. and map, see pp. 526–572.

Lanius excubitor pallidirostris Cassin.

There are various records of this bird in Sind; in the 'Fauna' it is stated that there is in the British Museum one from Daulatpur, near Sehwan, and one from Karachi (Gould coll.). Both of these I have examined; the Karachi bird is, I think, undoubtedly correctly named, but I am more than doubtful of the other one; it has a large bill and a black frontal band and a very small amount of grey on the lesser coverts just like many *lahtora* show; it was obtained in January 1855. There is a third bird from Ghizeree, near Karachi (Gould coll.), which is said to belong to this race: on examination I find that it is a very worn juvenile just beginning to moult, and so obviously obtained in the hot weather, when one would not expect to meet this race in Sind; also the lesser coverts which are in the quill are quite black: I think there can be little doubt that this, too, is a specimen of *lahtora*.

This race, which breeds in Beluchistan, is of course not unlikely to occur in winter or on passage in Sind, and would be easily overlooked among the great numbers of the resident *lahtora*. I did not meet with it so far as I know.

Lanius vittatus Valenc. "Boro."

The Bay-backed Shrike is common; eschewing quite bare desert which *lahtora* haunts, it may be met with almost anywhere where a few trees and bushes supply its requirements. In sparsely-wooded parts, such as the scanty desert scrub-jungle met with in many places, it is commoner than *erythronotus*; but as soon as cultivation or better-wooded parts are entered, the latter more or less takes its place, and Mr. Bell's experience tallies pretty well with mine. Taking Sind as a whole, this species is resident, but I think it is subject to local migration, as it was always commoner round Karachi in winter than in summer; Mr. Whistler tells me it is a summer visitor only to north Punjab.

The earliest nest I found was on 22 March with fresh eggs, and I have seen young on the wing on 11 April. It certainly breeds twice, probably three times, as I have found

fresh eggs on 18 June ; Barnes records nests in August. The "babool" and "kandi," both thorny trees, are almost invariably selected, and the nests may be from three to twenty-five feet from the ground. One nest, a very pretty though conspicuous object, was composed of little else than Dove's feathers, and it was not surprising, therefore, that the eggs had been sucked.

The Sindhi name for this bird means "the deaf one," no doubt applied to it on account of its confiding and fearless habits ; but this name is, or was, applied also to quite a different bird.

The plumages of this bird are little understood, and are difficult to interpret. The adults are alike in both sexes, save that the female has rather a narrower black forehead. The juvenile is typical of all Shrikes and is very variable ; some hardly show any trace of squamation on the under parts, and the upper parts vary a good deal in colour ; the wings and tail are quite different from the adult's, the former being brown with no white speculum and the latter light bay, the outer tail-feather being rusty white, all with subterminal narrow black wavy markings. The body-feathers, a variable number of wing-coverts, and the tertials are moulted, also the central and sometimes other tail-feathers. In this, the first winter plumage, the bird is a dull edition of the adult, but it totally lacks the black forehead and the ear-coverts are brown ; it presumably moults to adult dress the next spring.

Lanius schach erythronotus (Vig.).

The Rufous-backed Shrike is a constant resident, and I was unable to detect any migratory movement of any kind. It is much more a bird of cultivation than is *vittatus*, while both equally affect forest and scrub-jungle ; in the desert proper, however, this species is but seldom seen, and therefore it is rather less widely distributed than its smaller relative ; however, in the better cultivated parts it is numerous enough. It occurs out to the Beluchi boundary, where on the Habb River I saw young on the wing on 16 June.

It is an early breeder, and first nests may be looked for at

the end of March ; Mr. Bell records a nest with five eggs on 24 March, and I have found four half-feathered young on 13 April. I think at least three broods are reared in the season; in one instance which came under my observation the same nest was utilized for the second brood, which had three young in it on 31 May, and fresh eggs may be found early in June.

This species is subject to very great individual variation in coloration of plumage ; the rust-red of the scapulars, lower back, rump, and flanks varies very much in depth of colour, as does the grey of the mantle ; also the wing-spot at the base of the primaries may be well-defined or absent—apart from sex or age.

Wings measure (8 males) 89·5–92·5 ; (8 females) 89–91·5 mm.

The young moult their juvenile body plumage, usually the tertials, always the lesser, median, and inner greater coverts, and, I think, the central tail-feathers; they may then be recognized from adults by the browner primaries and primary-coverts, which are not black as in adults.

Lanius collurio L.

The Red-backed Shrike is an addition to the avifauna of Sind ; in September 1875, Butler found it fairly common at Deesa, east of the Rann of Cutch, on autumn passage, and therefore I expected it to turn up in Sind. The only other Indian records are from Gilgit, also on autumn passage.

The first I obtained was an adult female on 1 October, 1918, at the Sewage Farm at Karachi, and it was the only one which came under observation that year. On 8 September, 1919, I secured an adult male in some scrub-jungle in the desert near Karachi, and saw several more on the 12th. Probably it arrives in larger numbers, or rather more are induced to halt, in those autumns when there has been some rain, which has enabled such plants and bushes as are in the desert to put forth some signs of life—a circumstance which certainly occurs in the case of the Common Whitethroat and, perhaps, all passage migrants.

This is one of those species which fringe western India on their autumn passage to gain their winter quarters via the Arabian route (Yemen, Sept.) but do not seem to halt on the return passage in spring.

In the field this species may be recognized from the common *rittatus* by the absence of the white speculum in the wing and the great amount of white in the tail.

As I have already pointed out in the 'Birds of Mesopotamia' (J. Bombay N. H. S. xxviii.), the supposed eastern race *L. kobylini* of Buturlin is not good; specimens from the Caucasus (type-loc.), Mesopotamia, Persia, and India differ in no constant way from European examples.

Lanius cristatus phœnicuroides Severtz.

In Sind, as in the Punjab, Beluchistan, and probably Mesopotamia, this Shrike, unlike *isabellinus*, is purely a passage migrant; it passes through in small numbers from mid-September to mid-October, and like several others which take the Arabian route, misses on spring passage. So far as I can ascertain from specimens in the British Museum, this bird does not winter in India. The first record is that of one obtained by Dr. Gould at Hyderabad and figured in 'The Ibis,' 1867, p. 224, pl. v. fig. 1, under the name of *isabellinus*; it is a beautiful adult of this race. Murray obtained one at Kotri, which was recorded (S. F. vii. p. 13) as *cristatus*. This latter race does not occur in Sind, and Mt. Aboo is about its limit west.

These Shrikes come with the Red-backed, and I have usually found them in old cultivation and desert scrub-jungle: in the field these two in the immature stage are very difficult to tell apart; in the hand, *phœnicuroides* is less barred, less rufescent above, the tail is paler rufous, and the outer web of the outer tail-feathers is rufous, not white.

Twelve adult males in the British Museum measure: wing 91–96·5; tail 78–83, occasionally 85 mm. A similar number of adult males of *isabellinus* show that this has a longer tail (82–88 mm.) but not a longer wing.

Hitherto I have followed Dr. Hartert (Vög. pal. F.) in

considering all the Red-tailed Shrikes as races of one species, but I had not then read what Severtzoff wrote (see Ibis, 1876, p. 187) on this most difficult group. He is quite definite that both *phœnicuroides* and *isabellinus* breed in the Semiretchensk district of Turkestan, and my own researches lead me to believe that both breed also in the Tchimkent district (Syr Darya Province). Severtzoff got rather confused on what he called varieties of *phœnicuroides*, but so far as I can make out from his descriptions, his *montana* and *ruficeps* are *individual* varieties of the bird; on the other hand, he is quite definite that another variety—*caniceps*—replaces *phœnicuroides* in the steppes and lowlands, the latter being a bird of the highlands; and he mentions the valley of the Syr Darya, Mi, and Lepsa (S.E. of Lake Balkash) as localities, all below 1000 feet. There are two specimens which correspond well with his description of *caniceps* in the British Museum from Sary-su in the Kirghiz Steppes, and I obtained a third, an adult male, on 26 October, 1918, at Karachi which matches these well. These all differ remarkably from typical *phœnicuroides* in having the head and rest of the upper parts uniformly grey.

Whether *caniceps* is a geographical race or only an individual variation cannot with certainty be stated until we know more of its exact range, both altitudinal and horizontal; in any case, *caniceps* cannot be used for it as the name is preoccupied by Blyth (J. A. S. B. xv. p. 302, 1846).

Lanius auriculatus (= *L. niloticus*), recorded from Daulatpur by Murray, was in reality sent to him by Mr. Cumming from Bushire!

Lanius isabellinus H. & E. "Mulhalo."

Hume says that he found this species abundant to a degree throughout Sind; avoiding the more richly cultivated and irrigated portions of the country, it is to be met with perched on the topmost twig of almost every other bush in the barer districts of the province. This is, I think, somewhat of an exaggeration; it certainly is by no means rare, but I have found it rather local in its distribution. The sort

of country it likes best is where cultivation tails off into desert, where the ground is rather bare but yet where there are still plenty of bushes; absolute desert it does not care for, a part inhabited almost exclusively by *lahtora*—as Blanford also noted in the Thar and Parkar district. In the immediate neighbourhood of Karachi, probably the barest part of Sind, it is rather a rare bird except on passage; but even in the more suitable places in central Sind, where I have seen it most plentifully, I should consider a dozen in the day about the number one would notice.

This Shrike is a winter visitor to Sind, arriving about the beginning of September (earliest 30 August), and at this time they are more numerous round Karachi than at any other, and it seems likely, therefore, that some are on passage for farther south. The first arrivals appear to be young birds. They leave again in March (latest 8 March).

Its chief food appears to be beetles, but also the large ant, *Myrmecocystus lævis*, as Mr. Bell noted. In Lower Sind, in parts where it is not abundant, the few one sees are very often in tamarisks.

A series of males measure: wing 90–95, tail 82–88 mm. The second primary is equal to, or just longer or shorter than, the fifth.

Tephrodornis pondicerianus pallidus Tiechurst.

In the better cultivated parts of the province, especially in the "babool" forests, the Wood-Shrike is tolerably common; elsewhere it is hardly met with, though anywhere in the desert where "babool" groves occur a few pairs may be found. It is quite resident, and is found throughout Sind right up to the Beluchi boundary, which seems to be the limit of its distribution westwards. The nesting-season extends from the end of March to the end of June.

So far as I observed, this is a quiet, tame little bird, and as unobtrusive as is its coloration; though it usually seeks its food in trees, I have at times seen it picking about on the ground under trees; it is generally met with in pairs, sometimes in little parties of three or four.

In Bull. B. O. C. xli. p. 56, I separated the north-west Indian bird as *pallidus*, from the paler grey of the upper parts and ear-coverts as compared with the southern Indian bird; it extends to Jodhpur, Mt. Aboo (Rajputana) south to Khandeish, Punjab to Simla, Ambala and western United Provinces: the typical race is found in Madras, eastern Central Provinces, Behar, Bengal, Nepal, Upper and Lower Burma.

Pericrocotus brevirostris brevirostris (Vig.).

The Short-billed Minivet is a straggler in winter from the Himalaya. Murray first recorded it from Laki in December 1877. Mr. Bell says he saw a pair in the Abad Forest (15 m. north of Sukkur) on 8 February, and on 8 December, 1918 I obtained a single female in the high tamarisk forest of Bindi Dhareja just north of that town. Mr. Ludlow informs me he has once seen it at Malir near Karachi. Fairly common in the southern Punjab, it may be commoner in Upper Sind than these records indicate.

Mr. Stuart Baker correctly points out (Journal Bombay N.H.S. xxvii. p. 695 footnote) that Mr. Bangs has erroneously fixed the type-locality of the typical race in the eastern Himalaya; it should, of course, be in the western part of the range: thus the needless synonym *javillaceus* has been created.

Pericrocotus roseus roseus (Vieill.).

On 11 December, 1919, I shot a female Rosy Minivet at the Karachi Sewage Farm; it was with two others, also in female dress, and they were constantly being bullied by a male *P. peregrinus*. I at first mistook my bird for an immature female *brevirostris*, but in the hand it is easily distinguished by the shorter wing, larger bill, whiter underparts, and in lacking the yellow on the forehead and rump.

The occurrence of this Minivet in Sind and its south-western corner is not a little remarkable. There are but few records of it from the plains of India at all, and Mr. Whistler tells me he has only three records from the foot-hills

even of the Punjab. It may no doubt be easily overlooked from its close resemblance in the field to *brevirostris*.

Pericrocotus peregrinus pallidus Baker.

The Wandering Minivet is resident and fairly common wherever, even in the more desert parts, sufficient trees for its requirements are found. It is principally a bird of the acacia "babool" though also met with in other trees, as well as in mango and guava plantations. It is rather a local bird, and one may wander some time through groves and forest without coming across one; but when met with in winter it is always in a small party of six to eight individuals, and at such times I have always noted that females predominate to the extent of about four to one male, unless it be that these birds do not acquire adult male plumage in the first year, but of this I have never seen any proof. The flocks keep rather to the sunny aspect of the tree-tops, whence they sally out at times to take insect prey in flycatcher-fashion, while in the breeding-season the male may be frequently seen perched on the tip-top ere he launches forth in his display flight. I never was able to find the nest of this bird, but I believe it breeds in April and May: thus one obtained on 15 May was in breeding condition, while one on 26 May had commenced its post-nuptial moult.

Hume, fifty years ago, remarked on the paleness of Sind birds, as did also Oates in the 'Fauna.' In the Bull. B. O. C. xl. p. 115, Mr. Stuart Baker has separated the Sind bird as *pallidus*. There are two males and six birds in female dress in the British Museum, and these I have examined together with my series of two males and three females. I must say at once that the type of *pallidus* is an abnormally pale bird; but Mr. Baker has complicated the separation of what I believe to be an excellent racial form by fixing the type-locality of *P. p. peregrinus* as Ambala. Now, wherever Linnæus obtained his specimen from, and it seems certain from his description (see also 'Stray Feathers,' v. p. 181) that it came from northern India, it almost certainly never came from anywhere in the Punjab. According to a map of

India, dated 1765, the territory then under British rule was Bengal, North Circars, Madras, and various ports on the western side, and it was not until well on into the next century that the Punjab came under our rule. Now, comparing Sind birds with those from Ambala (whence I have seen eleven), the characters relied on by Mr. Baker in the male are by no means constant; the throat is not always grey but sometimes quite as blackish as in Ambala birds; the amount of crimson on the breast, too, is very variable, and in this and the whiteness of the underparts Ambala and Sind birds are not to be distinguished; the coloured parts of the wings, tail, and under-wing are usually less rich in the Sind birds. The females are rather more distinct; the Sind birds have no trace of yellow on the underparts: the axillaries and under-wing, and the coloured parts of the wings and tail are paler; the paleness of the upper parts is not constant. The truth is that Ambala birds, as with other species thence, tend to partake of the desert character, and are neither typical *peregrinus* nor typical *pallidus*, but intermediates, as one nearly always finds on the limit of the range of two geographical forms. Had Mr. Baker restricted the type of *peregrinus* to western Behar or eastern United Provinces no difficulty would have arisen, and the distinctions he points out would hold good. *P. p. pallidus* extends to the Salt Range and Sirsa in the Hissa district of the Punjab.

Pericrocotus erythropygius (Jerd.).

Twice in the "Itinerary" Hume recorded seeing this Minivet in Upper Sind, though apparently it was a slip for *peregrinus*, the common species, as he omits it from his Sind list, and five years later, in his review of the genus, he says "it has not yet occurred to my knowledge in Sind." That the White-breasted Minivet does occasionally wander to Sind, is quite certain however, as on 3 January, 1919, I came across a flock of one male and seven females on the Karachi Sewage Farm and secured specimens. The remainder were about the same place till 18 February, when they disappeared.

Oates in the Fauna Brit. Ind. alludes to one from Magrani (between Sukkur and Skikarpur) probably collected by Blanford.

The nearest locality to Karachi where this species is resident is Mt. Aboo and Deesa, some 350 miles east, mostly across desert, though it has been met with in Cutch.

[**Graucalus macei macei** Less.

Murray records obtaining the Large Cuckoo-Shrike near Sehwan in December, and the specimen is still in the Karachi Museum. If the locality is correct, this bird must be a rare vagrant to Sind, but it is significant the number of birds which Murray records from Sehwan which have not been since obtained anywhere else in Sind. It is said to be a local migrant in Kathiawar, coming to the plains only in winter. It is recorded from northern Gujerat, but not from Mt. Aboo, Cutch, or Lower Punjab.]

Oriolus oriolus oriolus (L.).

There is but one record of the European Golden Oriole in Sind; a specimen obtained by James in early September in a mango grove at Karachi was sent to Hume. This is another of those species which first fringe Sind alone of the Indian provinces on their passage from their breeding haunts farther north to their winter quarters in Africa. I never met with any Orioles in Sind myself, but I satisfied myself that some race of Oriole, either this or *kundoo*, does occur in quite small numbers from time to time at the seasonal migrations.

This race has been obtained on passage in Beluchistan. Murray (Vert. Zool. Sind) says that this species is a visitor to Sind in October and November. I know of no other record than the one given above, which seems to be the only one for India proper.

Oriolus oriolus kundoo Sykes.

Doig thought that the Indian Oriole bred in the Eastern Narra district in July and August, though he never succeeded in finding a nest. Murray says he obtained a specimen at

Sehwan in November. Butler records that it occurs occasionally in Lower Sind but is decidedly uncommon ; he had seen specimens from Karachi, Hyderabad, and the Eastern Narra ; there is a specimen in the Karachi Museum from Jhimpir. Orioles of any kind are evidently quite rare in Sind, and if it breeds it must be in the better wooded and cultivated parts of the province. The Indian Oriole is recorded once only in Cutch.

Pastor roseus (L.). "Bya."

The Rosy Pastor is a common winter visitor, very common in Lower Sind, less so in Upper Sind where it is chiefly perhaps a passage migrant. It is the earliest of all the winter birds to arrive and the last, except for some Waders, to leave. The first arrivals may be looked for between 13 and 21 July ; it leaves Lower Sind regularly about 6 May, a week later it has gone from Upper Sind ; it is thus absent a bare two months. From Sind it passes through the Quetta valley in mid-May and again early in August, and the same is recorded for southern Afghanistan ; others pass out of India through the valleys of the North West Frontier Province. On the Mekran coast Mr. Cumming tells me few may be seen on passage, and many pass through mid-Beluchistan. Farther west Dr. Aitcheson met with vast flocks in April near the north-east Perso-Afghan frontier ; farther west still, Mr. Woosnam noted it at the end of May at Burujird in north-west Persia, and its migration route lies north of the Mesopotamian plain to reach Syria, where Tristram saw flocks at Larissa going westward ; it breeds in Asia Minor. Thus we have in this remarkable westerly movement a migration almost without parallel, though rather similar to that of the Black-headed Bunting, among Indian birds.

That the Pastor is only absent for two months is not so very remarkable, as many Waders which go farther still afield to breed, are hardly absent longer.

The first Pastors to arrive are the adult males, and it is not until the end of the first week in August that the adult

females arrive, and up to this time only an odd young bird in brown dress is to be seen ; not till the third week in August do the latter come in any numbers, this was the case in both 1918 and 1919. The movements of the Pastor in winter are local and dependent entirely on food-supply. Usually to be found in cultivation, or where in jungle food may be found, I have occasionally seen them right away on the desert where a few scrubby bushes bore some yellow berries. They appear to be omnivorous and are voracious feeders, insect and fruit diets coming alike ; almost any kind of berries and fruits, grubs, "white ants," insects, and especially grasshoppers and locusts, are partaken of. Where a field of grass is being irrigated, a pink and black cloud of these birds quarrelling and chattering may be seen in attendance on the flooded-out insect life ; shortly before they depart they gorge themselves on the fruit of *Pithecolobium dulce*, swallowing the seed and pericarp indifferently.

When the Pastors first arrive they are in full but worn breeding-dress and at once begin to moult ; they are not fat. In such birds I have found incubation patches, and both sexes evidently take part. Before they leave they put on an enormous quantity of fat, and in the males the breeding organs become very large—almost to full breeding size—very much larger than in all other winter visitors with the exception of Geoffroy's and the Mongolian Sandplovers. It was this unusual enlargement of the testes which led Doig to think that they might breed in Sind ; the ovaries of the females, on the other hand, though enlarged are not so markedly so, and not more so than is usual in other birds which stop late, such as all Waders. From March onwards the Pastor may be heard in song ; between spells of feeding or just before going off to roost a flock will repair to some line of tall trees, and basking in the sun several will start a typical Starling song, though different from that of *Sturnus* : it is a jumble of discordant grating noises with some rather melodious warbles intermixed.

When the same food attracts, the Pastor may be found feeding in company with Mynahs and Starlings, but at roost

they fly off in unmixed flocks, and the vast flights of Pastors and Starlings from the Sewage Farm across the city to the engine sheds of Karachi Cantonment Station, where they roost, was one of the ornithological sights of Karachi. The Pastor is, I think, in Sind a bird beneficial to agriculture. I saw no damage done by them; on the other hand, they must eat an enormous number of harmful insects. In the "Report on the food of the Jowari-bird" (as it is called in some parts) J. Bombay N. H. S. ix. p. 66, it is stated :—"The locusts in Sind in 1889–90 were reported to have been exterminated by Jowari-birds, which did not attempt to eat the locusts but snipped them in two and left them (!) . . . . The Deputy Commissioner of Thar and Pashar reports (Dec. 21, 1891) that the Jowari-birds have materially assisted in clearing the district of locusts."

The juvenile plumage is moulted entirely, beginning with the wings and tail at the end of August, followed by the body in September and October; in colour the sexes are alike. For plumages see Pract. Hdbk. pp. 37–8, which account I can confirm. The brownish winter bill turns to pink in spring, and the base of the lower mandible to black; this part in the young bird is yellowish. The mouth of the adult male is dark plum-colour, greenish at the front of the palate; in the female these parts are duller.

Eleven males: wing 125–136; bill 24–26 mm. Seven females: wing 122–129; bill 23–24 mm.

Sturnus vulgaris poltaratskii Finsch. "Karo Whaheo."

A common but local winter visitor to Sind. Hume says he met with it in large flocks everywhere except in the most barren parts of the country. I think one might go even further than that and say that the Starling is only met with on permanently damp ground, that is, irrigated agricultural fields and the grassy edges of jheels, canals, etc. At Karachi it is the latest of all the winter visitors to arrive, very regularly during the last days of October and the first week of November. Great numbers haunt the Sewage Farm there all the winter, feeding on flooded-out insects in fields

which have just been irrigated. During the second week of March the numbers decrease, and the latest date on which I saw any was 25 March.

My series (14) are all very constant in coloration; the constantly purple head, throat and ear-coverts, and the green inter-scapular region with hardly any purple gloss, distinguish it from the typical form; it lacks the red-purple wing-coverts of *nobilior* and *dresseri*. The spotting of the upper parts is buffish, occasionally white as also in the typical race. Wings: ♂ 131–137, ♀ 127–128 mm. Bill from base: ♂ 26–29, ♀ 25–26 mm.

Sturnus vulgaris nobilior Hume.

(=*poltaratskyi* of the 'Fauna' *nec* Finsch).

Next to the Common Indian Starling, the Afghan race is the commonest. At the time Oates wrote the 'Fauna,' the various races of Starling were not at all understood and he was only able to find three specimens of this race from India and so gives, so far as Sind is concerned, an erroneous impression of its status. At Karachi vast flocks frequented the cultivation at the Sewage Farm all the cold weather, and here I found this race common in company with *poltaratskii*; similarly I have shot both races at one shot on the lush margins of the Manchar Lake, and on other occasions *nobilior* and *dresseri* from the same flock. I was often able in a good light with glasses to pick out this race from its commoner relative by the plum-red gloss on the wing-coverts, while the adult male usually looks blacker owing to the fineness and paucity of the white spots in winter dress.

The series obtained (12) are pretty constant in their characteristics.

Seven males measure: wing 130–134; bill (base) 30·5–33·5, exp. 29–30·5 mm.

Five females measure: wing 127·5–132; bill (base) 30·5–32·5, exp. 27–30 mm.

The iris of the female, as in *vulgaris*, has a pale outer rim, as is also the case with *dresseri*, *poltaratskii*, and *porphyronotus*.

No Starlings except the resident *minor* acquire the yellow bill of the breeding season while in Sind, but I have obtained

one of this race in February whose bill was beginning to turn. This race probably arrives early in November with the others, and the latest date on which I have positively identified it, is 9 March.

Sturnus vulgaris dresseri But.

I twice obtained this race—once, two birds from a mixed flock of this race and *nobilior* at One Tree Tank near Karachi, and a single bird in cultivation at Malir. They correspond well with *dresseri* in the Tring Museum.

Sturnus vulgaris porphyronotus Sharpe.

A Starling which I obtained from a flock of *poltaratskii* at Karachi on 18 February, 1919 I assign, not without some hesitation, to this race. It is one of those intermediate birds which are most difficult to place. It is more violet on the mantle, not so purple as *porphyronotus*, and yet it is too green on the head for *dresseri*. *S. v. porphyronotus* must occur in Sind; it is common in south Punjab, and there is a bird in the Karachi Museum from Sind which I placed as this race. In all these races typical birds are fairly easy to distinguish once the differences are grasped, but in a series there will be found intermediates in the three races, *nobilior*, *porphyronotus*, and *dresseri*, and I think it is a question whether when, if ever, we see a large series of breeding birds from Afghanistan and Turkestan it will not be found that some supposed races are founded on individual variations.

Sturnus v. humei is recorded for Sind; there are no specimens thence in the British Museum nor does it occur in south Punjab.

Sturnus vulgaris minor Hume.

The Sind Starling is a very local resident bird and we may search long and far before we meet with it. Hume was the first to obtain and recognize this Starling, which he found always in pairs "in the debatable ground between cultivation and desert" in the Larkhana district. Later on in 1878 Doig found many breeding along the E. Narra Canal in March. The nests were situated in holes in "kandi" trees (*Prosopis spicigera*) on the banks of the canal and also in the middle of

swamps; the eggs were laid on a pad of feathers of Spoonbill and Painted Stork which were breeding in the same trees. The first eggs were found on 13 March, the last on 15 May; the usual clutch was four, the largest five; these birds were breeding over an area of 200 miles, but beyond four miles on either side of the canal were not to be found. Other breeding colonies must exist, but this bird is much dependent, as are other Starlings, on damp ground or cultivation and suitable trees, and so, no doubt, it moves about locally according to circumstances. Other places where it has been met with are near Rohri, Manchar Lake, and the Bhorti Forest by Mr. Bell, who also saw many in April in tamarisk forest in the Jerruck division, and says it is not uncommon in places along the banks of the Indus. It certainly occurs as far north as Toji near Kashmore, whence I received a specimen in breeding state from Mr. Gordon on 15 May. At Jamrao Head on the E. Narra, as also round Rohri in December 1918 I failed to find it, but everything then was parched and scorched, and probably the birds, if there, had moved elsewhere, and I think failure of the monsoon in Sind explains the occurrence of this bird at Loyah near Etawah, some 700 miles east of its nearest known habitat, in January 1872 (Brooks), since when it has not again been found in India outside Sind.

In March 1919 I met with a pair on the canal bank running from Bubak to the Manchar Lake, and again on an island in the lake I found three pairs which I fancy were going to breed in holes in tamarisks there, though they had not yet begun. At this time of year they are easily distinguishable in the field from any other race as they are always in pairs, look small, and already early in the month they have acquired the yellow bill of the breeding season which the migratory races never assume in Sind. But although damp ground is essential for these birds, it is by no means everywhere, where these conditions obtain, that they will be found. I searched many likely localities in two and a half years, but this was the only occasion I came across it.

This race is the most distinct of all Asiatic races of

Starling, and the sheens are characteristic and constant. The winter spotting and the juvenile plumage are much the same as in the typical race, the size is smaller than in the other races. Wings measure 110–120 ; bill 25·5–27 ; tarsus 27·5–29·5 mm.

Iris in male brown, in female bright gold. Old records of *Sturnus ambiguus* and *purpurascens* in Sind refer largely to this race.

Temenuchus pagodarum (Gmel.).

Murray states that he shot a specimen of the Black-headed Mynah out of a flock of Rosy Pastors at Trainhi on the Manchar Lake on 27 November, 1877 ; Butler obtained one in the Lyarree Gardens at Karachi on 13 November in the same year. Barnes (J. Bombay N. H. S. v. p. 108), probably referring to these records, states that it is very rare in Sind.

I met with this species several times. At Malir 12 miles east of Karachi there is an extensive dry river on the banks of which a considerable amount of vegetable and mango cultivation is carried on, and here I found that a few pairs of Black-headed Mynahs are resident ; when I first discovered them on 15 May they were evidently nesting and were using old nesting-holes of the Sind Pied Woodpecker. They struck me as being peculiarly local, and it was only in two places in several miles of cultivation that I met with them, and they haunted the same spots the next year. In winter they would seem to wander locally, as I have twice seen single birds amongst flocks of Starlings, Pastors, and Mynahs at the Karachi Sewage Farm, viz. on 28 March and 29 December, 1919. I cannot differentiate Sind birds from those from the type locality.

Acridotheres tristis tristis (L.). "Myna."

Like the House-Sparrow the Common Mynah is found throughout the Province in the immediate vicinity of habitations, and its numbers are in proportion to the latter. In bare desert and thick jungle it is rare or absent, and in some

remote villages very few may be met with, as at Dost Allee in Larkhana and Jungree in Karachi Kohistan. It occurs at the Habb River on the Beluchi frontier and in villages in Thar and Parkar. The earliest nesting I noted was in mid-April, and young are on the wing by 29 May, while I have seen it still building on 3 August. Besides the common sites for nests, in Karachi an old Crow's or Kite's nest is frequently made use of; one which I examined was an old Crow's nest which had been relined by the Mynahs.

A cinnamon variety came under notice at Karachi and wherever it went it was mobbed by others of its tribe. Sind birds do not differ in any respect from those from other parts of India.

Acridotheres ginginianus (Lath.).

The Bank-Mynah is very much a bird of the Indus valley and canal areas, and is fairly common though somewhat local the whole length of Sind: Blanford noted it in the villages of the Thar and Parkar district, but at the south-west corner of the province it is only a sporadic visitor in cold weather, and then, I think, only in those years when the monsoon has failed and its wanderings are instigated by consequent shortage of food-supply. Be that as it may, there was no rain in Sind from July 1917 to July 1919, and the cold weather of 1918 was the only time I saw this species in the Karachi neighbourhood, when a flock or two turned up on 10 October and remained till 12 April following, frequenting the Sewage Farm and other cultivation.

Mr. Bell has supplied me with interesting notes on the nesting of this bird. He states that it breeds fairly commonly in the banks of the Indus, in old wells or in even quite low banks a few feet high, especially those of excavations for the Persian wheel. He found them building on 18 March and numerous eggs were taken on 1 April; the complete clutch varied from four to six.

The British Museum contains rather a poor series of this common Indian bird, but specimens from Sind, Bombay, Punjab, N.W. Frontier Province, Nepal, Kumaon, United

Provinces, and Behar are all similar: four birds from Bhutan are considerably darker than these on the upper parts, but as the colour tone varies much with wear, in the absence of a good series in fresh plumage I hesitate to recognize any races. Latham's type was said to come from "in regno ginginiano," but the species does not occur so far south (*i. e.* nr. Pondicherry).

I have a note that two specimens of *Æthiopsar fuscus* in the Bombay Museum were said to have come from Kotri; this must have been a mistake as this bird is certainly not found in Sind nor is it known from the Lower Punjab, Jodhpur, Mt. Aboo, or Cutch.

Muscicapa striata neumanni Poche.

The Spotted Flycatcher is a passage migrant through Sind and usually turns up about the second week in September, though Hume recorded one from Kotri at the end of August; its passage lasts right up to the end of October and the last that I saw was a single bird on 5 November. Never very abundant, yet at the height of its passage by no means rare, it much affects the shade of "babools," though I once met with one quite out on the desert in a single "babool" tree. During spring passage it did not come under observation in two years, nor has Mr, Whistler met with it then in the Lower Punjab, though it passes through there in autumn.

All my specimens are typical *neumanni*, which is a pretty distinct race; the upper parts are much paler, under parts lighter, less heavily streaked and not so dark on the sides of the breast, as compared with the western (typical) form. Two adults at the end of September had not moulted their wings, one had moulted the tertials only, the other some of the secondaries and corresponding coverts. This is contrary to the usual rule, amongst adult migratory passerine birds, that the wings are moulted before migrating, and I noticed this exception also in other species in India. I have occasionally seen it in British migrants, but these were migrating very early and before any moult took place at all.

Siphia parva parva (Bechst.).

In Lower Sind the chief status of the Red-breasted Flycatcher is that of a passage migrant; a few may overwinter, though the only winter specimen I saw was a single bird at Jamrao Head on the Narra Canal early in December. Hume recorded several near Sukkur on 30 December, the only time he met with it. Its times of passage are most marked: it arrives in autumn at the end of the first week in October and, never very common, single scattered birds may be met with in favourite haunts till mid-November; it repasses again quite regularly from the last week in March to the end of the second week in April (latest seen 17 April), and is commoner on this passage than in autumn. Butler too, found it common on spring passage in March and April at Hyderabad. It is not a conspicuous bird and one must know where to look for it; it is invariably found in shady places such as a line of well-grown "babools" or "peepuls" in cultivation, ; in the desert I never met with it. It feeds in true flycatcher style, seldom going down to the ground as the Pied Flycatcher does, and its habit of flirting its tail up in Chat fashion and the white in the tail are conspicuous characters. It is curious that it should be rare in Sind in winter, as it is fairly common in the Punjab at that time.

All Sind specimens are typical *parva*. Examination of a considerable series of Indian birds leads me to differ somewhat from the account of the plumages given by Mr. Witherby (Pract. Hdbk. p. 296) in that the female in spring may, though not always, have some red on the chin and throat: thus one adult (26 March) has chin and throat as rich as an adult male (but the ear-coverts are brown); another adult (12 April) and one bird of the previous year (29 March) have these parts pale rusty red. I have never seen a female in winter with any red on the throat, so presumably it is acquired at the spring moult, which involves chin, throat, ear-coverts, and part of the crown, though all these parts are not moulted in every case. The males of the previous year in spring vary very much in the amount of red on the

throat, from none, or a faint tinge on the chin alone, to pale orange rust on chin and throat; also they have brown not grey ear-coverts.

Tchitrea paradisi turkestanica Zar.

The Paradise Flycatcher is a rare bird in Sind; I only know of three records, though Murray says it is a winter visitor arriving in September. The first was obtained by Murray on 13 December, 1877, at Laki, and Barnes got another at Hyderabad. I obtained the third, a young female, in a guava plantation in the Lyarree Gardens at Karachi on 23 October, 1918.

I have examined a very large series of these birds, and those from Kashmir, Kandahar (April), Simla (Aug.), Murree, Shalugan (June), Kamptee, and Sind are paler than the typical race from Ceylon, and must I think stand as *turkestanica* Zar. (Orn. Monatsb. 1911, p. 85—Turkestan). I do not think Indian Peninsula birds are separable from Ceylon specimens either in colour or measurement (wing 90–97) and *ceylonensis* of Zar. & Härms is a pure synonym. *T. p. turkestanica* is only a winter visitor to the plains.

Hypothymis azurea styani (Hartl.).

The Black-naped Blue Flycatcher has not been recorded in Sind before. On 18 February, 1919, I saw under some thick shady *Pithecolobium* trees at the Karachi Sewage Farm a Flycatcher which was unknown to me and on securing it, it proved to be this bird. To meet with this species in the south-west corner of Sind and in the last piece of cultivation before one reaches the Beluchi frontier, was most unexpected; its nearest habitat seems to be the Poona district, some 400 miles south-east, where it is said to be quite resident, nor do I know of any record which indicates local migration. It must be the merest vagrant to Sind and is unrecorded in the Punjab, Mt. Aboo, Deesa, and Cutch. My bird agrees well with the northern Indian race.

Rhipidura aureola aureola Less.

The White-browed Fantailed Flycatcher is common and resident in the better cultivated and afforested areas; in the

more desert parts, including desert scrub jungle, it is almost wanting. It is a tame, familiar bird wherever found and is often seen in the bungalow compounds of even large towns. It is an early nester, and I think more than one brood is reared; the male very easily betrays the locality of the nest by uttering its pretty little song in the vicinity or by pursuing any other species which approaches too near. Mr. Bell notes nests with fresh eggs on 27 March and 22 April; I have found eggs just hatching on 2 July and Doig recorded fresh eggs on 4 July.

I cannot separate Sind birds from those from Bengal, which fact however is not surprising as this species in Sind does not come under desert conditions. ♂: wing 80–81, tail 93–97; ♀: wing 73–78, tail 87–93 mm.

The juvenile moults in autumn the body feathers, all the wing-coverts except the primary series, some of the flight feathers but not the tail; birds in their first winter may be recognized by the brown primary coverts.

Saxicola caprata rossorum (Hart.). "Pidi."

The Pied Bush-Chat is very common throughout Sind except in the hills, desert and desert scrub-jungle, where it is unknown. Thus in cultivation, open thickish jungle of tamarisk, acacia, etc., such as borders many jheels, and lines the Indus banks, it is one of the characteristic birds and is a constant resident. Round Karachi it is naturally rare, though even here a few pairs may be seen in suitable places. Doig gives the nesting season as from April to August: I found a nest at Karachi on 22 March containing three fresh eggs; the nest was composed entirely of grass and was situated on a bank concealed by a tuft, much the sort of position an English Robin would choose. Mr. Bell found two nests with four eggs each on 26 and 31 March, well concealed in the bottom of grass clumps in tamarisk jungle.

This bird has a very pleasing little song, and the love flight of the male during the pairing season is a very pretty sight as he flies up singing from the top spray of a bush with slowly beating wings, displaying his white patches to full advantage, to settle on the top of another bush.

Sind birds are typical *rossorum*, the type and topotypes of which I have examined, and are distinguished from *atrata* by their smaller size and more white on the belly in males. A series measure : male, wing 70–75, bill (base) 13–15 ; the third to sixth primary emarginate and the second is between the seventh and eighth in length. The juvenile is very like a young Whinchat ; brown above with white central spots, upper tail-coverts pale fulvous, underparts creamy-white with faint brown edges to the feathers of the throat and breast. The post-juvenile moult involves the body feathers, all coverts except the primary, and the three inner secondaries ; the male is then distinguished from the adult by the brownish tips to the black upper parts, the fulvous tips to the breast feathers, and the browner wings, tail, and primary coverts. It breeds in its first year and there is no spring moult.

It is difficult to see why Dr. Hartert refers to this race as probably a winter visitor to the plains of north-west India ; it is quite resident and seems peculiarly sedentary.

Saxicola torquata indica (Blyth).

The Indian Stonechat being a bird of cultivation or bushes in its vicinity or of open well-grown tamarisk jungle, is consequently commoner in Upper Sind and the Indus valley than elsewhere. It is a winter visitor and the earliest I have seen it was on 1 October, and I have no record of it after 16 February ; I met with it comparatively seldom in Lower Sind, and it eschews desert scrub-jungle. Blanford found it in Thar and Parkar, however, occasionally even among the sand-hills.

Eleven males. Sind and Punjab. Wing 68·5–71, occas. 73 ; bill (base) 13–15 mm.

Nine females. Sind and Punjab. Wing 65·5–70 ; bill (base) 13–14 mm.

The amount of white in the base of the tail varies individually ; often there is none at all, often only on the "fluffy" base of the feathers, hardly ever on the outer feathers ; sometimes it extends well on to the webs of the other feathers almost as much as in some examples of *S. maura*. The bill is very variable in size.

Saxicola torquata leucura (Blyth).

Hume found the White-tailed Stonechat abundant, but local, in the jheels of Upper Sind ; he writes : "Where the water, as it were, was paved with the leaves of the lotus and 'singhara' (*Trapa bispinosa*) and dotted over with tiny clumps or single stems of reeds and flowering grasses, the White-tailed Chat might be seen perched sideways on one of these wind-swayed reeds, every now and then darting down on to one of the lotus leaves, seizing some insect there and returning to its previous perch, instantly recognizable when on the wing by the great amount of white in the tail. Outside high-water mark I never saw a single specimen." Brooks came across this bird near Sukkur near a backwater of the Indus, where blue vetches and small tamarisks were growing.

In my experience too, this Chat is not found in Lower Sind nor did I, nor Doig, nor Butler find it in the eastern Narra district, though the locality seemed suitable. I only came across it once and that on the Manchar Lake on 9 March, where I obtained a male, with organs enlarged to breeding size, in the drying reeds and sedges on the lake-side ; the female was probably sitting. To Mr. Bell, however, belongs the honour of first describing the breeding of this bird in India, and I must here acknowledge once more the debt of gratitude I owe him for so kindly handing over to me his nesting notes to incorporate in this paper. Mr. Bell says that at the end of April 1904 he had seen several pairs in the Keti Shah Forest near Sukkur (almost where Brooks found it), and on revisiting the place at the end of March 1906 he again found many pairs. They affect the inundated land only, that is to say, open ground in the immediate vicinity of backwaters of the Indus on which later vetches are grown and on which tusssocks of grass and low tamarisks flourish. In such a place on 28 March he saw a pair and marked the female to the nest, which was situated under a little heap of dead tamarisk twigs left after clearing the field for sowing. The nest was placed in a depression, well hidden and made of dead tamarisk leaves lined with a few dead grasses and three or four Black Partridge feathers,

and measured $4\frac{1}{4}$ inches in external, $2\frac{1}{4}$ in internal diameter, and $1\frac{3}{4}$ inches deep. It contained three incubated eggs. Another nest with one young one was placed under a clod and made of dead grass and a few Partridge feathers; another day he found two more nests with two eggs and three young respectively, and several other pairs were undoubtedly breeding; all of these were in an area of 200–300 acres. The song of the male, he says, is short and lark-like, not at all like that of *caprata*, and the alarm-note of both sexes is a "peep-chaaa." After the young are flown the birds take to the edge of the jungle. In a precisely similar locality at Kairo Dero ii on 14 March, 1905, Mr. Bell found a nest in a depression of the ground quite covered in by the leaves and stems of the vetches; it held three fresh eggs of the same type as those of *indica*. Mr. Bell has seen this bird early in March at Dalipota in the north Hyderabad district in dry cultivation surrounded by dry canals with high grass along them, and he thought the birds were building. He has also met with it in Larkhana and Jacobabad districts, but not in Lower Sind.

In December 1918 I was very close to where Mr. Bell and Brooks both found this Chat (at Sukkur), and hunted places which exactly fitted their descriptions, but in vain; the whole place was very parched and there were no crops anywhere owing to the low level of the Indus; I mention this to show how a locally distributed bird may, owing to local conditions, alter its habitat. It is also worth remarking for how long a time the status of a bird, even in India, may be unknown if it is local, though it is rather surprising to see it referred to (Ibis, 1922, p. 20) as a straggler to Sind with the above information of Hume and Brooks available. I have no doubt that wherever it occurs it is resident, *e.g.* Lower Punjab, Ferozepore, etc.

Sind birds are topotypes; I cannot separate from them birds from Bhutan. The white in the tail-feathers of the male varies in extent and differentiation according to age, it being less in birds of the year, while the lower parts are suffused with the chestnut colour of the breast in winter,

this largely being worn off in summer. The female with its almost uniform grey-brown upper parts cannot be confused with female *indica*, moreover the upper tail-coverts are not rufescent but grey-brown; there is no white in the tail, which is a uniform "bleached" brown, paler than in *indica*. The bills in both sexes are usually longer and wider at the base than in *indica* (*cf.* also Ibis, 1922, p. 20).

Sind and Punjab, 6 ♂: wing 67–71: tail 49–52: bill (from base) 14·5–15·5 mm..

Sind and Punjab, 3 ♀: wing 65–67: tail 48–52: bill (from base) 15 mm.

Saxicola macrorhyncha (Stol.).

Hume included this species in the additions to the Sind list which from time to time were published in 'Stray Feathers,' and in a review of this species (*t. c.* vii. p. 55) he gives its distribution as . . . . . "Sind, Thar and Parkar districts and probably elsewhere." I have been unable to find any original record of this bird in Sind nor are there any specimens thence in the British Museum. However, I think it may be safely included as inhabiting the eastern desert of the Province, as Hume probably had definite evidence, and moreover it is very likely to occur as it is known from the Jaisalmer desert, Jodhpur, Deesa, Cutch, north Beluchistan, and south Punjab. Where it occurs it is, I believe, absolutely resident and very local. Mr. Whistler found it in the Punjab in bare open plain with a few scattered bushes.

Brehm's *Saxicola macrorhynchos* being a *nomen nudum*, the above name can stand for this bird.

Œnanthe monacha (Temm.).

Hume found the Hooded Chat in the Khirthar in December, and in January near the Gaj and in the Nurree Nai as low down as 700 ft., both these places being gorges which come out from the Khirthar to the plains. It probably occurs in small numbers throughout the range, as it does along the Mekran coast, and it must have been mere chance that I did not see it in the Laki Hills near where Murray also

met with it in November. I failed to find it in the lesser hills, such as the Soorjana, though like *alboniger* it may occur quite low down in the higher hills. It is presumably resident.

Œnanthe alboniger (Hume).

Hume's Chat is confined to the higher hills of the Khirthar: the most easily accessible place is in the limestone hills at Laki (2000 ft.), which here abut on the Indus and N.W. Railway. I visited these hills on 9 February and 2 March. The nullahs here have a dried-up water-course and scattered bushes and trees manage to exist; the sides are steep, boulder-strewn slopes, the tops of which meet the sheer cliff-faces, and here, where the largest rocks broken off from the cliff have come to rest at the top of the slopes, is the home of this bird. It is not common, a pair being met with about every mile; sometimes one may see them lower down the slopes, but always on the largest rocks, and I have seen them nearly as low down as the water-course and only a few hundred feet above the level of the plains. No abundance of bird-life is found in these rugged hills—a few Crag-Martins, small flocks of Striated Buntings, a few See See, and odd Redstarts and Red-tailed Chats make up about the total, and odd pairs of Hume's Chat seem to enhance the desolation.

From the state of the organs of those obtained in March I should say they would breed early in April. Close to where I found two pairs I found apparently two old nests, identical in construction and situation. They were placed in weather-worn cups in the face of huge limestone rocks lying on the slopes and some 20 feet up from the boulder's base. They were composed of a twig foundation, the outside of which was well plastered with mud into which chips of limestone were incorporated; the lining was soft grass. The nests had been used for roosts.

This Chat is I believe strictly resident, probably never leaving the gorge it breeds in; its habits resemble those of *picata*. In the lower hills such as the Soorjana and lower hills round Karachi it does not occur.

Four males: wing 104–108, tail 72–76·5, bill (base) 20–21 mm.

Two females: wing 100–101, tail 67·5–69, bill (base) 17·5–20 mm.

The females are very slightly duller black on the throat. Primaries 3 to 6 emarginate; 2=6/7 or 6 or 5/6.

Œnanthe picata (Blyth).

The Indian Pied Chat is, I think, the most generally distributed member of the genus, though perhaps numerically it may be outnumbered by the Desert Wheatear; it is, however, found in places where the latter is not, and besides being found in open desert and thin scrub-jungle it also inhabits the lower hills and cultivation, but in Sind, as elsewhere, it especially delights in the neighbourhood of native huts, cattle compounds, low walls, etc., whither it is doubtless attracted by abundant insect-life, and this familiar little bird may even be seen in the compounds of cantonments as at Karachi. One of the earliest winter visitors to arrive, it is preceded by only the Pastor and Hoopoe among the land birds; the males arrive first, about the end of the second week of August or even earlier, but it does not become common until the first week of October in Lower Sind. Many, I think, have left us again by the end of February and the rest go early in March, a female on the 28th was the latest seen, an exceptionally late bird. The arrival and departure of this bird in Sind corresponds well with the departure and arrival of it in north Beluchistan, whence it seems probable the winter visitors come.

The males of this species in Lower Sind vastly predominate, the females always being rather rare, a curious and undeniable fact which I do not attempt to explain. This sprightly bird may be commonly met with perched upon some prominent position such as the corner of a roof, wall, or top branch of a euphorbia, whence it darts down to the ground to seize some insect or beetle, and then moves off to another point of vantage; each seems to keep to its own territory, and may be seen within it the whole winter doing its rounds from one "look-out post" to another and greatly

resenting the trespass of any other Chat. In the heat of the day it sits quietly in some shady spot. Each winter a bird, probably the same one, frequented my compound and roosted each night in a hole under the roof of my bungalow.

Barnes, remarking on the commonness of this species in Sind, says he has reason to believe that it breeds in the Bolan Pass (higher up it is of course a common breeding species) and may do so in north Sind: this, I think, is not improbable, it breeds in the high lands of Kelat, and the highest ranges of the Khirthar in Sind are really but the last range of these mountains before one comes down to the plains.

I have (Ibis, 1922, pp. 151–5) gone into the question of supposed dimorphism of this bird, and dealt at some length with its plumages and measurements, so that I need not recapitulate here.

Œnanthe capistrata (Gould).

I have already gone very fully into the question of this bird and stated my reasons for considering it a distinct species and not a dimorphic form of *picata* (see Ibis, 1922, pp. 151–155). It only remains to reiterate that it is very uncommon in Sind, whereas *picata* swarms. Doig obtained one on the E. Narra on 18 February, 1879, and Blanford shot two near Cape Monze on 18 February, 1877, recorded (S. F. v. p. 246) as *morio*, where he comments on its rarity in Sind. All these are in the British Museum, and are undoubtedly *capistrata*. I obtained a female which I assign to this species at Karachi on 29 January, 1919, and I thought I once saw a male from the railway. Beyond these there are no records save that it seems, curiously enough, that Gould's figure was taken from a bird probably obtained near Sukkur (S. F. vii. p. 119).

Œnanthe opistholeuca (Strick.).

Strickland's Chat, too, is evidently quite a rare bird; Hume remarked on its entire absence; Blanford's collector got one either at Kotri or Karachi, though he himself only saw it outside Sind—in the Jaisalmer desert. There is one

from near Jacobabad, obtained by Doig on 22 November, 1878, in the British Museum, and one in the Karachi Museum labelled "Karachi." Butler says he has seen a few from Upper Sind. I never met with it at all, though I found it not so very rare in the Lower Punjab.

[**Œnanthe leucomela** (Pall.).

Though this Chat might easily occur in Sind on passage (it has been obtained in the southern Punjab by Mr. Whistler), I only refer to it here to clear up once and for all various records which have appeared under the name of *morio* or *leucomela*. Blanford (S. F. v. p. 246) recorded two specimens of "*S. morio* (=*capistrata* Hume *nec* Gould)" as obtained near Cape Monze in February 1877. These are in the British Museum and both are true *capistrata*, as were also all his *morio* from the Jaisalmer desert. Murray (S. F. vii. p. 113) states that a specimen of *Saxicola leucomela* was obtained by his collector at Daulatpur together with four other "new" Indian birds in November 1877. Blanford (*t. c.* p. 527) rightly threw doubt on these records. The bird was referred to as *lugens* (Fauna B. I. ii. p. 69), and I have since ascertained from Mr. W. D. Cumming that all five birds were sent by him to Murray from Bushire !]

Œnanthe isabellina (Cretzsch.).

I found this species occurring everywhere in suitable places, but not so numerously as *deserti* or *picata*. It arrives in Sind later than the last named but before *deserti*; the first ones may be looked for in the second week of September, but it is not till well on in October that it becomes plentiful. It inhabits much the same sort of ground as *deserti*, but if anything prefers more sandy plains and not so much rocky or stony desert; jungle or damp places it avoids, though it is very partial to old plough-land; I have seldom noticed it settle on bushes as *deserti* frequently does. Blanford records it in the Thar and Parkar district as keeping more to the fertile tracts. Though this species nests at Quetta, I have no evidence that it breeds anywhere in Sind. Like most

Chats, it is found solitary and resents the intrusion of any other bird in its area. It leaves Lower Sind by about mid-March. Its food I have found to consist of small seeds and beetles.

Œnanthe deserti atrogularis (Blyth).

This Chat at all events is well named, being a true denizen of the desert; generally distributed in the vast arid tracts or where a little scrub jungle occurs, in cultivation proper it is not seen, nor have I met with it in the hills. It is a winter visitor, the first males arriving in Lower Sind about 6 October, it becomes common by the middle of the month; the females, as with other Chats arrive later, and I have not noticed any before 24 October. Most leave again by the end of February, and the latest date I have met with this species is 10 March; like other migratory species it becomes exceedingly fat before departure.

Out in the desert this Chat may be met with almost anywhere, but it is particularly fond of broken ground, either sandy or rocky, and also of old cultivation which has reverted to desert. Here it takes up its position on any raised lump or stone, and also on low bushes, whence it darts down to take its prey or fly up Flycatcher style to take an insect on the wing. Its chief food appeared to be beetles. Mr. Bell records it feeding on *Hodotermes macrocephalus*. Males very greatly predominate.

My series measure:—♂, wing 92–97; ♀, 89–92, once 97. February and March specimens show no sign of any moult anywhere. So far as I am aware, the race *oreophila* does not occur in Sind or in the plains of India (*cf.* Ibis, 1922, p. 155).

Œnanthe xanthoprymna chrysopygia (De Fil.).

Hume noted the Red-tailed Wheatear everywhere where he touched on the foot-hills of the Khirthar Range in winter, and my experience is similar. Anywhere in the lowest foot-hills in precisely the same places as is found the *Ammomanes*, this Wheatear may be confidently looked for in small numbers, and in places such as the gorges in the Laki Hills

it is comparatively abundant; I have met with it up to about 2000 feet and at Cape Monze on the rocks just above high-water mark. Outside the hill area it is a scarce bird; Butler records it from Hyderabad, but there are small rocky hills even there: Mr. Kinnear obtained it at Pithoro, and Blanford met with it in Thar and Parkar (where there are also low rocky hills), though it was commoner there on passage. I only met with it once outside the hill district, and that a single bird at Rohri on rocky ground, a terrain it seems constantly associated with.

Of its arrival I have no accurate note, it is common by the first week in November, and I have seen it as late as 2 March, about which time it probably leaves. Its food consists largely of black ants. Hume says he never saw this bird perch on bushes as other Wheatears do; in many places where it is found there are no bushes, but I have occasionally seen it perch on the top of euphorbias and other low bushes.

There is not much variation in the plumage of this bird. Measurements of my series are:—

Nine males: wing 93–97, tail 62–65, bill from base 18·5–19·5 mm.

Six females: wing 90–92, tail 60–64, bill from base 18–19 mm.

A bird obtained on 23 February shows slight moult on chin and back, but I am uncertain how far the spring moult extends. The second primary is between the fifth and sixth, occasionally between the sixth and seventh.

The *Cercomela melanura* Rüpp. *apud* Blyth, *ex* Burnes' drawings from Sind, was probably this species.

Phœnicurus ochruros phœnicuroides (Moore).

The Indian Redstart is a common winter visitor wherever cultivation, gardens, and thicker jungle exist. It is a bird of the shade, and each one keeps pretty well to its own beat where it has its favourite perches, usually the lower bough of some tree, which it visits in turn to await the appearance of its insect prey on the ground beneath. Apart from the

bare desert there are few places where this cheerful little bird may not be met with—a small clump of acacia trees out on the desert is sufficient cover to harbour one or two, while the rocky gorges of the lower hills of the Khirthar range as at Soorjana, Laki, or the Gaj, scanty as the trees and bushes there are, seem always to hold odd birds.

The Indian Redstart is a late migrant in Sind: the earliest I have seen in Lower Sind was on 29 September, and it is not at all common till mid-October. It leaves again in the last week of March; the last to go are the females, and I have notes of odd ones as late as 16 April.

The adult male has the mantle and scapulars black with grey edges, the median and lesser wing-coverts black; the first winter male has no black on the upper parts, these being grey with brown edges and the lesser and median wing-coverts dark slate edged with grey, and furthermore it retains the browner juvenile flight-feathers and greater coverts. Wings, ♂ 80–84 mm.; second primary between the seventh and eighth in length. At the end of February there is a partial moult in both sexes involving the feathers of the face (forehead, chin, ear-coverts).

The type was obtained at Shikarpur by Griffith; the fixing of the type-locality as Kashmir (J. Bombay N. H. S. xxvii. p. 712) was unnecessarily wrong.

Ruticilla mesoleuca, recorded by Murray from Daulatpur, was really sent him from Bushire. *Phœnicurus erythronotus*, which occurs in northern Beluchistan and Lower Punjab, has not been met with in Sind.

Cyanosylvia suecica pallidogularis (Zarud.).

Wherever sufficiently thick cover on damp ground occurs the Bluethroat is fairly common; it particularly affects reed-beds round drying jheels, tamarisks, crops such as "jowari," "triagal," etc., and I once saw one in a mangrove forest in Karachi Harbour. It arrives about the end of the first week in October and the latest I have seen it is 11 April, though most have gone, I think, by the third week in March, by which time the spring moult is finished. It is a skulking little bird, and when flushed dives for the nearest little open

space, where it settles and runs with tail cocked-up into the nearest cover. I only very occasionally saw one perched up on a bush conspicuously, and that at about sunset when it was doubtless singing.

Seven males: wing 69·5–75, bill 15–16 mm.

Three females: wing 70·5–74, bill 15–16 mm.

The blue on the throat varies a little in paleness; all are too pale here and on the back for *S. suecica*, and correspond well with *pallidogularis*. Dr. Hartert (Vög. pal. Faun.) recognizes *dicessa* from Altai as the smallest, palest, and bluntest-winged Bluethroat. Two specimens from Sind match well in these respects two from Altai. The point of the wing in Sind birds varies from 12–15·5 mm. taken from tip of inner secondary next the tertials, and this in *dicessa* I make 12–14 mm.; the wing-measurements and colour differences between these two races are so very slight (and not very constant) that I am not satisfied that *dicessa* is a good race. Should it eventually turn out on examination of more breeding birds from Altai to be recognizable, then *dicessa* occurs in Sind.

Thamnobia fulicata cambaiensis (Lath.). "Kabari Pusri."

In Sind the Indian Robin is very much a bird of the desert, where scattered euphorbias and a few camel-thorn bushes ("Kandero") alone struggle for existence or in places which, where more frequent bushes occur, might be dignified by the name of open scrub-jungle. Here it is more noticeable as birds are very scarce, and I have been in forlorn and desolate-looking low hills where, in the hot weather, a pair or two of this bird were the only living things to be seen. It seemed, therefore, all the more remarkable to me to find it common in quite thick damp "kaku" grass and "kandi" jungle on the Narra Canal, where it appeared equally at home: to cultivation, however, and to the vicinity of habitations it seemed quite foreign, and I do not remember meeting with it in such situations.

The Indian Robin is resident; it breeds in April and probably has more than one brood, as I have found young just

hatched on 18 June. Mr. Ludlow has a clutch of seven eggs taken at Malir on 20 April, but four to six is the more usual number.

[**Copsychus saularis saularis** (L.).

Butler records that occasionally during the hot weather he noticed Magpie Robins in the Lyarree gardens at Karachi. There are three specimens in the Karachi Museum, labelled "Sind," perhaps obtained there. This bird certainly does not occur now at Karachi, and I conclude that in the absence of any other subsequent records in Sind that these birds were escapes. It is said to be a cold weather visitant to Mt. Aboo and north Gujerat, and does not occur in Cutch.]

Turdus ruficollis atrogularis Temm.

The Black-throated Thrush is a winter visitor in variable numbers. Hume says that in the better cultivated parts of Upper Sind he found it very common in January and December. Maybe it is always commoner in Upper Sind, where suitable terrain is more abundant, but I am certain that in Lower Sind it is a weather migrant to a large extent. In 1917–18 I saw none, in 1918–19 very few, but at the end of 1919 an extraordinary influx set in: I had seen odd ones up to 29 December, when I noted several, but on 4 January, 1920, they were swarming wherever a little cultivation afforded cover and food; a week later many had again passed on. This Thrush is a common winter visitor to Quetta in northern Beluchistan, and I ascertained that the weather there about Christmas-time was unusually severe, and it seems reasonable to suppose that these birds had migrated to the warmer plains of Sind in front of the cold snap.

According to my experience, and it agrees with that of Hume, this Thrush is a bird of damp groves and cultivation, and may be seen in almost any cover provided the ground is damp. It hops about when feeding in a Fieldfare-like manner, and when disturbed often flies to the topmost bough of a tree, reminding one much of a Fieldfare. They roost in company in any thick-foliaged tree. At this time of year they

are entirely insectivorous, feeding on larvæ, "white ants," etc. The note is not unlike the alarm chuckling of a Blackbird but much softer, and it has another alarm-note like the Redwing's call. Males far outnumber females, and even so some of the apparent females are males of the first year. The earliest I have seen it at Karachi is 25 November and the latest 23 March.

Capt. Malden informed Hume that he had obtained *Turdus unicolor* at Jacobabad; Hume apparently did not see the specimen, and Malden's identification cannot be relied on.

Monticola solitarius longirostris (Blyth).
Monticola solitarius pandoo (Sykes).

The Blue Rock-Thrush is not uncommon in the Khirthar Range and, at places where the few perennial streams such as the Gaj and Nurree Nai flow through them, it is abundant, even down as low as 600–700 feet. The only one I personally met with was at the bottom of a ravine on the Cape Monze range west of Karachi on 3 February: this range is about 800 feet high, but the bird was practically at sea-level. In Lower Sind it appears to be very local, and to the plains it is evidently quite a rare straggler; it is only a winter visitor to Sind.

As indicated above two races occur: from the Khirthar Hills, Sehwan, and Karachi are males in the British Museum obtained by Hume and Blanford, and these all belong to the paler and larger race *longirostris*. The female I obtained, however, certainly does not belong to this race but to *pandoo*; females of this Rock-Thrush are more easily differentiated than males, and this bird is far too dark for *longirostris* and matches well topotypes of *pandoo*. From a series of topotypes of each race:—

solitarius. ♂: wing 122–127 mm.
longirostris. ♂: „ 121–127 mm. Males paler; females greyish brown above, less dark and less rufescent below than in the other two races.
pandoo. ♂: „ 117–123 mm.

Blyth's name, with good description, founded on a specimen from between Sind and Ferozepore (J. A. S. B. xvi. 1847, p. 150) takes precedence by 52 years over Dr. Hartert's *transcaspicus*.

Monticola saxatilis (L.).

The Rock-Thrush has not been recorded from Sind before; on 15 April, 1919, I met with two isolated birds in thin desert scrub-jungle near Karachi, and on the 17th I found two males frequenting the broad open paths in the Karachi Sewage Farm. On 20 November I secured an immature bird on the grassy banks of a tank also near Karachi; though late this bird was probably on passage as it was exceedingly fat, and its migration was perhaps delayed by its having several parasitic cysts in the skin. I have invariably found that very little will hold up a bird's migration, such as a tail-feather or two missing, and birds will not set out on a long journey until an abundant supply of reserve material in the form of fat has been laid up and essential feathers are in good trim.

This species has only very rarely been recorded elsewhere in the plains of India, and is one of those which take the Arabian route. The spring birds are in beautiful fresh plumage, contrasting markedly with the very worn wings.

Monticola cinclorhyncha (Vig.).

Butler records that he saw one for some days from 9 March, 1877, at Karachi. It is not impossible that a few may pass through Sind on passage to the hills, but perhaps not regularly.

Ploceus philippinus philippinus (L.).

The Common Weaver is local in Sind, and so far as I could ascertain, not so numerous as the Streaked Weaver. Butler says it is not uncommon about Hyderabad and the country east, and I found several colonies at and near Karachi where cultivation exists. Hume did not meet with it in Upper Sind, but it is almost sure to occur there; I have seen

Weavers' nests (from the train) nearly as far north as the frontier.

I had several colonies under observation at Karachi, and I always found that they were composed entirely of this species, the Streaked Weavers keeping strictly apart, though Butler has recorded on one occasion all three species nesting in one tree. From close and long observation I formed the opinion that males greatly predominate, as Hume found with the other two species in winter: thus at two isolated nests three males were present, at another colony of fifteen nests about fifteen males were seen and only two or three females; at another eight nests eight males and two females, and so on. Moreover, at every colony there were more nests built than ever had eggs in them, and nests are left in all stages of incompleteness, a circumstance I put down to the ceaseless energy of the surplus males. To the excellent account of the nesting of this bird given in Hume's 'Nests and Eggs' I can add but little. Round Karachi the nests were in "babool," "kandi," or other thorny trees in cultivation, and suspended by three or four twigs from the tips of the boughs well out of reach. The colonies varied from eight to about fifty nests, but I found one isolated colony of two nests; the material used was invariably, I think, leaves of the "jowari" (*Sorghum*). One colony seemed to me to be in rather a peculiar situation: consisting of fifteen nests it was situated in a "kandi" growing out of the inside of a well, and all the nests were quite below the level of the ground. The same trees are resorted to each year, and some of the old nests utilized again if sound, or patched up if not, while sometimes new nests are built on to and suspended from the funnel of old nests. At a colony on 24 June many nests were being built, but some at least had young in the nest: these were fed by both parents with entirely insectivorous food such as caterpillars and grasshoppers. The males at a colony are very quarrelsome and pugnacious, constant bickering with neighbouring males occupying most of the time in the intervals of nest-building (of which they do the greater share), especially on the arrival of a female. The males have a sort of display, in the

performance of which they hang head downward on the side of the nest with wings drooping and shivering. The pieces of mud in the fabric of the nest must be, I think, for steadying the nest; to serve the same purpose I have seen the funnel fixed to a twig.

Sind specimens do not appear to me to be separable from those from the rest of India.

Ploceus manyar flaviceps Less.

Throughout the province, in the better cultivated parts of course, the Streaked Weaver is the commonest bird. Hume noted in Upper Sind in the cold weather, that wherever the "khan" grass abounded, this Weaver was very common, feeding in flocks on the seeds and insects harbouring in the grass. In Lower Sind it is perhaps not quite so abundant, yet it is by no means rare. Hume noted that males vastly predominated, a fact which I can corroborate both in this species and in the Baya.

The nesting season is from June to September, though I once found a male busily building on 30 April. The colonies, unlike those of the Baya, are always small, four or five up to ten in a group and usually placed over water. Thus I have found them in tamarisk, reeds, bulrushes, etc.; but at Karachi, where there is no water, I have found colonies in "babool," cocoanut palm, etc. in cultivation. On 14 June nests were being built and some were finished; on 26 June I examined a colony in a row of cocoanut palms, one or two nests in five consecutive trees; they contained fresh eggs, incubated eggs, a day's difference in incubation between each egg, and in one case feathered young. Two, but fairly often, three eggs are laid; these are laid as soon as the egg-chamber is complete and before the funnel is built. Butler records it breeding in great numbers along the bank of the E. Narra and found the colonies to be always pure ones, as were all I examined; he found two colonies in "jowari."

Hume noted that Sind birds were not typical *manyar*; the latter from Java has a deep gold head and dark brown edges to the upper parts and a brownish wash below. In

Sind birds the head is paler gold and the edges of the upper parts much paler, and there is hardly any rufous on the abdomen; this corresponds pretty well with birds from Madras. Stresemann (Novit. xix. 1912, p. 319), reviewing the group, gives the type-locality of *striatus* Blyth as Bengal; this is quite incorrect; Blyth (J. A. S. B. xi. 1842, p. 873) says "specimens .... amongst those collected by the late Sir A. Burnes in the Western country," *i. e.* Sind or Punjab; *striatus* is a synonym of *flaviceps*.

This Weaver moults at the end of March, the head, ear-coverts, cheeks, and upper throat certainly, perhaps all the body plumage.

Ploceus benghalensis (L.).

Hume met with the Black-throated Weaver commonly in the "khan" grass forests in parts of Upper Sind, as near Larkhana and at Mangrani near Shikarpur. Butler thought he found it nesting together with the other two species at Hyderabad, and Barnes, although he met with it at Hyderabad, thought Butler must have been mistaken in the identity of the nests, as all the Weavers' nests he found there were those of the Baya. I did not meet with *benghalensis*, which must be the rarest or the most local of the three Weavers in Sind, and I see no reason to doubt that it is resident. Hume noted that of the many specimens he examined all were males; I have already noted the great preponderance of males in the other species.

Specimens from Sind resemble in all respects those from Bengal.

Uroloncha malabarica (L.).

The White-breasted Munia is very common throughout the length and breadth of the province, in desert, scrub-jungle, cultivation, and more open parts of forest alike. The breeding season is very prolonged, and it is probable that, as a species, it may be found nesting in every month of the year, though individuals do not breed at any rate whilst moulting; thus I have notes of nests in nearly every

month from February to September. It seems likely that birds hatched early in the year breed in the same autumn (as suggested under other species), as I have obtained birds of the year in moult in July in which the sexual organs were becoming enlarged; such a circumstance is not at all common amongst birds. Its food consists of seeds of grasses such as *Pennisetum typhoideum*, "khan grass," sedges, etc.

Sind birds are not separable from birds from Madras and Mysore. Male: wing 55·5–56·5, tail 53–56 mm. The juvenile undergoes a complete moult.

Amandava amandava amandava (L.). "Suruk" ♂, "Chitli" ♀.

This species is a constant resident throughout Sind wherever the tall "giant grass" (khan) abounds, and locally it is very common, so that the distribution of this bird may be said to be, roughly speaking, the Indus valley and the canal areas. Outside this I have only met with it at Karachi, where in the cultivation it is not uncommon, but its occurrence there is not without suspicion of its originally having been introduced by the liberation of cage-birds. This, however, now cannot be proved either way, and as this little bird does undoubtedly rove about locally according to the plenteousness or otherwise of its food-supply, there is nothing very improbable in it having colonized Karachi naturally; the only other place I have seen it between Karachi and the Indus (105 miles east) is at Malir, 15 miles east of Karachi. The breeding season is after the monsoon rains; they were always in flocks during the hot weather, and adults which I shot were certainly not breeding. I first noticed them paired on 9 September, and the breeding season probably lasts from about then to the end of December, as on the 15th of that month I examined a female which had a soft egg in the oviduct. Probably some cease breeding before this, as a male on 2 December had just begun to moult. Contrary to what has been stated in the 'Fauna' and elsewhere on the plumage of this species, the male certainly does not hold its red plumage all the year, but after breeding moults its body-feathers and

acquires a yellow plumage resembling that of the adult female, but is distinguished by its greyer throat and upper breast. In May and June both sexes are undergoing a complete moult,—body, wings, and tail,—which will bring them into full breeding plumage again by July or August.

The juvenile, which has a reddish-yellow iris and a black bill, may also be distinguished by the fulvous tips to the tertials, coverts, and tail; the bill begins to turn red about February, and moult begins in April.

Bucanetes githagineus crassirostris (Blyth).

I found this species to be a fairly common winter visitor to the low hills west of Karachi and the desert in their immediate vicinity; away from this I never met with it. Even here these birds appeared to have their favourite haunts, and one might walk all day and never see a bird unless one knows of some rocky hill, where they are always to be found feeding on the seeds of some desert plant or along the high-water mark left by the rain floods; moreover, they are exceedingly difficult to detect on the desert ground, so well do they match it in plumage. However, I found the best method for ascertaining their presence was to watch by some tiny perennial spring or "rains" pool; if in the vicinity, one would not wait very long before a small flock would appear from the neighbouring desert hills to settle on the rocks near by prior to drinking, for they appear to be very thirsty birds and come about every hour. Hume and others found them along the Khirthar foot-hills in winter.

There can be little doubt that this species is really resident, moving down altitudinally from the higher hills of the Khirthar to winter in the lower hills and foot-hills, from the north right down to the Habb River in the south. When they arrive I have no certain knowledge of: the earliest I have seen them is 11 November, and they leave again early in March, by which time hardly a trace of the brilliant summer dress is yet discernible.

Blyth's type of *B. g. crassirostris* came from Afghanistan (J. A. S. B. xvi. 1847, p. 476), and Sind birds agree well

with Afghan specimens, having a longer wing and on the whole a stouter bill than has *B. g. githagineus*. My specimens (12) give the following measurements :— ♂ : wing 88–93, bill 12·5–13, depth 9–10. ♀ : wing 83·5–89, bill 12–13, depth 9–10 mm. The bill in the male is dull orange-yellow, dull yellow in the female. The males, besides having a brighter pink wash than the females, have the crown hoary grey tipped with brown instead of wholly brown as in the latter sex.

A Linnet was said to have been obtained at Daulatpur by Murray's collector : this really came from Bushire ; Butler thought he saw one at Karachi, but no further confirmation of the species in Sind has come to hand.

Carpodacus erythrinus roseatus (Hodgs.).

The Common Rose Finch would seem to be a rare bird ; Murray obtained two at Sehwan in December 1877 and sent them to Hume for identification. Major Raymond Cooper tells me that he had one alive once which had been caught near Karachi a few years ago; it was an adult male, but in captivity it lost its red colour at the next moult. I saw a pair and obtained the adult male at the Karachi Sewage Farm on 6 January, 1919. There is one in the British Museum from Sehwan (Hume coll.), doubtless one of Murray's referred to above.

Serinus pectoralis Murray (Vert. Zool. Sind, 1884, p. 190— Karachi) appears to have been *Serinus icterus* of Africa, and doubtless an escape.

Gymnoris xanthosterna transfuga Hartert (= *flavicollis* auct.).

The Yellow-throated Sparrow is a somewhat local bird, but in places quite common. To Upper and Central Sind it is perhaps a summer visitor arriving, as Sir Evan James noted, in March ; neither I nor Hume met with it in winter in Upper Sind, and even to the Narra district it is probably also a migrant. Blanford records it in Thar and Parkar where trees exist. In Lower Sind however it is resident, in spite of Butler's assertion to the contrary, for I have found it

common round Hyderabad in winter as well as meeting with it at Karachi, though at this season it is rather a quiet secretive bird.

I found it common in "kandi" jungle near Jhimpir and in old tamarisk forest near Jerruck during the nesting season, and here holes in trees must be utilized. Round Karachi it is not at all a common bird owing to lack of trees; one pair bred in an isolated "babool" grove along the Sehwan road, and I could find no hole in these sound young trees wherein the birds could have nested, and I am inclined to think that an old House-Crow's nest was utilized. At Hyderabad the tops of lamp-posts were formerly used.

The food of this bird I have found to consist of the seeds of grasses etc., and it is very fond of the contents of the flower of the Leafless Caper or "Lirru" (*Capparis aphylla*), and its forehead is often stained with the pollen.

Sind birds are inseparable from those from Persian Beluchistan, and differ from the central Indian birds in the paler upper parts and lesser wing-coverts. The juvenile resembles the female, but is more ochraceous brown above and lacks the yellow throat-spot. It has a complete post-juvenile moult and so resembles *Passer* more than *Fringilla*, and the bill in the juvenile is also more Sparrow-like. In the breeding season the bill is black, flesh-coloured at the base of the lower mandible; legs and feet lead-grey: in winter the bill is brown or bluish black and the legs and feet brownish: the juvenile has the bill horny-flesh, legs and feet pale lead-grey.

Males measure: wing 81–85·5 mm.; bill from base 14–16.

Passer domesticus indicus Jard. & Selby. "Cheelee."

The House-Sparrow is, of course, abundant throughout the length and breadth of Sind, wherever there are human habitations, far from which, however, it does not occur. In some places where only a few huts or an odd bungalow are the only signs of habitation, especially in thick jungle country, it is scarce, and also I have found it not very

common in remote villages such as at Jungree at the foot of the Soorjana Hills; whether it occurs or not in the higher hills I do not know for certain, but it probably does so in the small settlements there.

Doig says the Sparrow nests in every month of the year, but this I could not confirm; it may build nests, but does not I think lay before the end of March (earliest eggs 25th), and the earliest young on the wing were noted on 11 April; nor do I think it breeds much after October, as I never saw newly flying young later than that. No remarkable nesting sites came under observation, but I do not recollect seeing open nests in trees in Sind, though I have in Beluchistan.

Nine males measure: wing 75·5–77·5, tail 55·5–57·5, bill (base) 13·5–14 mm.

Five females measure: wing 71–74·5, tail 54–57, bill (base) 13–14 mm.

Passer domesticus parkini Whistler.

On 12 December, 1918, I met with a flock of House-Sparrows right out in the "khan" grass jungle on the Jamrao Canal, in the sort of place one expected to meet with *pyrrhonotus* or *hispaniolensis*, as House-Sparrows do not frequent such places unless near habitations; consequently I shot one to make sure of the identity, and was surprised to find that it was a regular giant of a House-Sparrow compared with our resident birds. On my return to Karachi Mr. Whistler curiously enough wrote to me about some similarly large House-Sparrows he had obtained at Jhang in the Lower Punjab "evidently migrating," and we came to the conclusion that some large form, probably a hill-race, was a winter visitor to the north-western plains of India. Whence came these Sparrows? St. John (Ibis, 1889) says House-Sparrows leave southern Afghanistan and Kelat in winter; Marshall makes the same statement as regards Quetta (which I too can confirm); Whitehead recorded vast numbers on passage in spring at Kohat, and Fulton says it is a summer visitor to Chitral. Here, then, was a guide as to whence our Sparrow came. Mr. Whistler subsequently visited Kashmir and

found our Sparrow to be the breeding-bird there, and separated it as a new race *parkini* (Bull. B. O. C. xl. 1920, p. 13). As I have already pointed out (J. Bombay N. H. S. xxviii. p. 231), it is a bird of wide distribution. My Sind specimen is a male and measures: wing 83, tail 61, bill 14 mm. It has the white cheeks of *indicus* and is, on the whole, purer in coloration.

Passer hispaniolensis transcaspicus Tschusi.

From the records of the occurrences of the Spanish Sparrow it appears to be a winter visitor in quite small numbers to Upper Sind. To Lower Sind it is only a straggler; I met with it there but once—a small flock in "kandi" jungle near Karachi on 22 November, 1919, though constantly on the look out for it. It is in my experience much more of a jungle Sparrow than *indicus*, and is very partial to the "khan" grass. Sind birds are typical *transcaspicus*.

Passer pyrrhonotus Blyth.

How a very local bird may be lost sight of for years is well exemplified in the case of the Sind Jungle-Sparrow. It was sent to Blyth by Sir Alexander Burnes, and for nearly forty years no more specimens were forthcoming until Doig in 1880 (S. F. ix. p. 278) announced its rediscovery in the E. Narra, and he had been working in this district for years before he came across it. He found these birds nesting high up in acacias growing in water, and on 24 April they were just beginning to build; he subsequently found more nests on 25 August, all with young more or less fledged, the nests being in similar situations. As regards the habits he says he never found these birds any distance from water, and they were usually in flocks of five or six or up to twenty in number; their food consisted of small seeds and insects, and they were very fond of the seed of a creeper which grows on the tamarisk. The nests were like those of House-Sparrows but smaller, and the eggs showed three types. The note is like that of a House-Sparrow but fainter.

Mr. Bell writes that this Sparrow is fairly common in the jungles of the Indus from north of Sukkur down to the Sadnani forest in the Karachi collectorate, and occasionally as far as the jungles in the Hyderabad district. He found it frequenting fairly tall tamarisk-jungle round jheels and in mixed jungle of this and acacia. The nests are often great globular depressed masses of tamarisk-twigs, with a hole in the side or top leading to a central chamber which is lined thickly with feathers; the external diameter varies from 90–180 mm. Many nests in the Sadnani forest on 23 April mostly contained young, one clutch of four, the rest three; in one nest the young were about to fly.

I found this little Sparrow in winter at Jamrao Head on the Narra Canal not very uncommon, in little flocks of five or six individuals feeding with Amadavats on the seeds of the "khan" grass, in a forest of which, mixed with "babool" and "kandi," it was exclusively met. This jungle had been flooded at one time, and was so still in parts. The birds seemed particularly fond of the tall grasses growing up through a "kandi" bush, into which they could retreat at the slightest alarm. Here I found two old nests, one at the top of a pollarded tamarisk supported by the sprouting branches, the other in a fork of tamarisk, and both about 15 feet from the ground in mixed "khan" grass and acacia jungle which had been inundated. The nests were rather like those of *P. domesticus*, but more depressed.

I again met with this bird in similar jungle at Sukkur, a flock of about fifteen, apparently all males. I also found a few pairs on a tamarisk-covered island in the Manchar Lake on 10 March, where they were, I think, about to breed, from which locality Becher has also recorded them. They are rather noisy little birds, and the note reminded me rather of a Wagtail's call-note.

Dr. Hartert (Vög. pal. F. p. 151) is undoubtedly in error in making this Sparrow a race of *domesticus* (and Mr. Stuart Baker (J. Bombay N. H. S. xxvii. p. 731) has recently followed him). From the writings of Doig forty years ago it was evident that this could not be so, as he then recorded both

species breeding in the Narra district. Nor are the habits at all like those of *domesticus*, it is essentially a jungle Sparrow; moreover, I have seen *domesticus* and its nest within 100 yards of *pyrrhonotus* and its nest, the former in an isolated bungalow, the latter in the jungle near by! As pointed out by Hume (S. F. ix. p. 444) it is in all respects more nearly allied to *Passer moabiticus*.

My series show little or no variation in plumage, they measure: ♂: wing 67–70, bill (base) 11–12·5. ♀: wing 64–65, bill (base) 11–12·5. Legs and feet brownish; bill in winter dark brown above, yellow-brown below; bill in summer black. There is a complete post-juvenile moult.

The name "Rufous-backed Sparrow" seems inappropriate for this bird, and has been used more applicably for another species (*P. rufodorsalis* auct.). I have therefore introduced the English name Sind Jungle-Sparrow as being more suitable.

Emberiza schœniclus pallidior Hart.

I saw a Reed-Bunting close to Karachi in a temporary rush-covered jheel on 3 November, 1917. I did not meet with it again till 3 December, 1918, when I secured one in a "khan" grass and "kandi" forest at Jamrao Head, where this Canal takes off from the E. Narra Canal. It was the only one I saw. I saw another in a reed-bed on the Manchar Lake at Christmas 1919. Common enough in parts of the Lower Punjab wherever the "khan" grows, I cannot think that it can be as rare in Sind as the above records indicate, and probably in Upper Sind it will be found to be not uncommon. This species has hitherto not been recorded from Sind.

My Sind and Punjab birds are typical *pallidior*; I have no knowledge of the typical race occurring in the Punjab (*cf.* Pract. Hdbk. p. 151; Vög. pal. F. p. 196, etc.).

Emberiza stewarti Blyth.

Murray says he obtained this species near Sehwan in November, probably in the hills, as Blanford got one in the Khirthar Range west of Larkhana on 5 December, 1876.

Surgeon-General Stewart has stated that he thinks he has seen it in Sind in the cold weather. This bird, which is so common in the juniper-forest area of northern Beluchistan, may well move down into northern Sind in the winter, and possibly is not very uncommon in the Khirthar, but I doubt it being met with in the plains.

The type-locality of this species is Koteghur, near Simla, in the Himalaya (*vide* Zool. 1886, p. 435).

Emberiza luteola Sparrm.

Blanford records one obtained at Rohri on 3 April, 1875, and Butler saw a few pairs on spring passage on 4 April, 1877, on the "maidan" on the Clifton side of Karachi. Possibly this species does not normally touch Karachi on its migrations as I never came across it, and it may be commoner in Upper Sind on passage than these records indicate, as it is a summer visitor to the highlands of Kelat and northern Beluchistan.

Emberiza buchanani Blyth.

The Grey-necked Bunting is chiefly a passage migrant, which fact Butler also noted. In spring the earliest arrivals were noted on 3 March, but the bulk come during the latter half of the month, and in some years, as in 1919, they were very numerous and the passage lasted until 17 April. In autumn the last half of September sees them passing through again; in 1918 there were very few, but in 1919 a good many came under notice, one piece of desert jungle at Jhimpir being full of them on 21 September. A certain number apparently spend the cold weather in Sind, probably only in those years when the monsoon rain has been good and desert-plants have therefore seeded; thus Murray records it in November at Sehwan, Blanford too met with it in Thar and Parkar in the cold weather, and I saw a few in desert jungle near Karachi on 22 November. During their passage they are to be found in scrub-jungle, cultivation such as "jowari" crops, cut lucerne fields, and especially on the edges of fields where weeds abound and on whose seeds they largely feed.

As with *E. melanocephala*, males vastly predominate : the reason for this I thought was that the sexes migrated separately and the females came through later and perhaps halted a shorter time. Its migrations too, I think, closely resemble those of its congener as it passes through Lower Sind and Beluchistan and Persia, and is found in summer as far west at all events as Lake Van in N.W. Persia (Ibis, 1907). As this bird is not found south of the line Mesopotamian plain—Persian Gulf, its migrations must largely partake of an east-west character.

There is not much variation in the plumage of this bird, the adult autumn plumage is much the same as the spring ; the males of the year have the head browner than the adults, and the females have less chestnut above and below than the males ; there is no spring moult.

Nine males measure : wing 85–91 ; tail 75–79 ; bill from base 13·8–14·5 mm.

Emberiza melanocephala Scop. "Booree."

The Black-headed Bunting is very common throughout the cultivated parts on spring and autumn passage, and its times of coming and going are most regular. It arrives in Lower Sind in the last days of March, and the passage continues till mid-April, while in the autumn the first arrivals may be seen in the last days of August, and all have moved on again by the third week in September. They keep to themselves, not associating much with *E. buchanani*, whose times of passage are coincident, and on spring passage particularly affect cereal crops, which are then in ear, doing great damage. In 1869, according to Sir Evan James, so much damage was done by these birds in the wheat-fields round the Manchar Lake that the crops were not worth cutting. The Sindhi name, which means "deaf," is given to this bird as no amount of shouting will scare it from the crops. Wintering farther to the south and east in India, the migrations of this bird can be traced through Sind apparently crossing the Khirthar Range, as it is not common in the Quetta Valley, on through Beluchistan into Persia.

where many breed; one branch route at all events passes along the Jebel Hamrin Range and leads to the summer quarters in upper Mesopotamia, Syria, and south-east Europe. As it is unknown in Egypt and the Sudan the migration is much more E.–W. than S.–N., as also in the case of the Pastor, and like the latter, too, it returns to its winter quarters in worn breeding-dress and then moults, contrary to the rule in most Passeres.

On spring passage vast clouds of these birds may be seen in the ripening crops; on being flushed they fly to the nearest acacia, making the whole tree a yellow mass. Out of hundreds seen in such flocks 98 per cent. are males; maybe the females pass through later and quicker and so tend to escape notice, but it is quite certain that the males pass through first and in almost pure flocks. In the autumn I did not find them so common as in spring: this is probably due to lack of corn crops; they frequent scrub-jungle and cultivation alike, and are mostly young birds in juvenile dress.

Gengler (Orn. Monatsb. xxii. 1914, p. 159) has described a race *orientalis* from E. Sarpa steppes, Astrakhan. While I think it extremely unlikely that a recognizable race inhabits that region, I may remark that all the characters he relies on are utterly variable, and I consider *orientalis* to be a synonym; birds from the Volga, Greece, Palestine, Cyprus, Turkey, Persia, and India are all precisely the same: some are paler, some richer in the yellow parts; some show a yellow neck-collar, others do not.

My Sind specimens measure: ♂: wing 92·5–100, tail 72–78, bill (base) 16–18 mm. ♀: wing 85–92, tail 65–71, bill (base) 16–17 mm.

Hardly any two spring males are precisely alike; some males have no chestnut-red on the rump, others have it entirely of this colour, while in the female this part may be yellowish, reddish, or grey! and there is much other variation. The juvenile plumage is much more compact (less "fluffy") than in most juvenile Passeres.

Emberiza calandra, recorded by Murray from Daulatpur, in reality was sent to him by Mr. Cumming from Bushire,

It might however occur, as both Mr. Whistler and myself obtained it in the Lower Punjab.

Emberiza striolata striolata (Licht.).

The Striated Bunting is not uncommon in Lower Sind in winter wherever rocky desert or low hills occur from the Beluchi boundary to Hyderabad, and also in Thar and Parkar. It is commoner perhaps in the foot-hills of the Khirthar Range, and it is surprising that Hume never met with it there. In the Laki Hills in the Sehwan district I found it to be the commonest bird, and here fair-sized flocks were to be met with; at other places I generally found it in little lots of two to five individuals. Apart from rocky desert I only met with it once, and that in some sandy cotton-fields near the Jamrao Canal. Unlike its Saharan representative, this bird is by no means "eminently a House-Bunting"; I never saw it anywhere near habitations.

Whether this bird breeds in Sind is not known for certain, but I think it probably does so in the higher hills of the Khirthar; it certainly breeds in Kelat, which is really part of the same hills.

It arrives in Lower Sind in the third week of September, and the latest I have seen it is 11 April. A few, I think, are also passage migrants, as I have seen some in places where they do not occur in winter, during the passage of other Buntings, and it was interesting to note that these birds kept to an artificial stone embankment during their visit, in lieu of a rocky hill-side—so strong is the instinct of a particular habitat. Like the Desert-Bullfinch this species is always flying to water, and the surest method of ascertaining its presence in the vicinity is to sit by a water-hole. Its food consists of the seeds of desert grasses and of one of the Compositæ common in the hills.

The males differ from the females in having the chin, throat, and crown more streaked black and white; the juvenile is much like the female and its moult includes the body-feathers, minor wing-coverts, tertials, and central tail-feathers. My series measure: ♂: wing 73·5–81, tail

59·5–65, bill (base) 11–11·5 mm. ♀: wing 72–75·5, tail 57–61, bill (base) 11–11·5 mm. I have seen no Nubian specimens whence came the type, but Sind birds are not separable from birds from the Sudan littoral.

Melophus melanicterus (Gm.).

Murray states (S. F. vii. p. 112) that he obtained a specimen of this Bunting in the hills on the far side of the Manchar Lake. Hume identified the skin, but he also remarked that none of the specimens obtained on this trip bore labels, and we know Murray mixed up some Bushire birds among the Sind ones, so that one cannot say the evidence is quite satisfactory. However, I suppose it is conceivable odd birds may wander into Sind; it is common at Mt. Aboo, and occurs on the Koochawan hills of Jodhpur.

Riparia riparia diluta (Sharpe & Wyatt).

This race is a winter visitor to Sind and is fairly common, though in better watered parts its numbers are swamped by the resident form; a careful scrutiny will often reveal that there are two sizes of Sand-Martin in the air, the larger being this race. In the south-western corner, however, Sand-Martins are not very common, and it is only this race which occurs. The earliest I have seen it is 3 October, and in the few places where a little fresh-water or swamps exist, and not very uncommonly even over Karachi Harbour itself, a few may be met with. Most leave early in March, last seen 29 March in Upper Sind.

Eight specimens (and six in Brit. Mus.). These are all larger, greyer, "colder" in colour than *chinensis*, and have the tarsal tuft present, and correspond well with typical *diluta*; they are paler than winter *R. r. riparia* and the collar is less defined. They are also larger than *indica*. ♂ ♀. Wing 97–106·5 mm. A complete moult takes place in January.

I recognize the following races of *R. riparia* in north-west India:—

1. *Riparia r. chinensis*.—Browner and "warmer" above; collar absent. No tarsal tuft. Wing 90–99 mm.

Resident in N.W. India, except N.W. Frontier Prov. and extreme N. Punjab.

2. *Riparia r. diluta.*—Greyer and "colder" above; collar indistinct. Tarsal tuft present. Wing 97–106·5 mm. Winter visitor.

3. *Riparia r. indica.*—Colour as *diluta*. Tarsal tuft present. Wing 88–98 mm. Specimens from Pushut, Kohat (breed), Campbellpore (breed), Thall (breed), Jhelum (breed).

Cotile riparia recorded by Blanford from Rohri and Manchar Lake are undoubtedly *diluta* (examined in B.M.).

Riparia riparia chinensis (Gray). "Ābābīl Paki."

The small Indian Sand-Martin is resident and extremely common in the Indus valley and canal areas, west of these areas I never saw it however; no Sand-Martin breeds in the south-west corner of Sind, this part being extremely arid with little or no fresh-water, and so is unsuited to its requirements in the breeding season. A Sind jheel at daybreak presents an animated scene; the sun is not yet up and the mist hangs heavy over the water; little is yet astir save a prowling Marsh-Harrier or two and other kindred spirits. As soon as the sun begins to peep above the horizon the air is filled with crowds of these little Martins, which with a good many Swallows have been roosting in the reed-beds and are now like large phantom moths in the rising mist, flitting about on all sides, welcoming the warmer air with their shrill squeaks.

This Martin breeds early; already in the beginning of December I saw them excavating holes in the E. Narra: Doig gives February as the nesting month, and on 2 March I examined one of the many colonies in the banks of the Indus and found a good many nestlings just hatched; eggs may however be met with much later, and probably more than one brood is reared.

I consider that the illustration of this bird in Hardwicke's Ill. Ind. Orn. is perfectly recognizable and that Gray's name must stand (*cf.* J. Bombay N. H. S. xxvii. p. 735).

Ptyonoprogne obsoleta obsoleta (Cab.).

The Pallid Crag-Martin is found in winter in all the foot-hills and in the hills themselves of the Khirthar from the north to Cape Monze. Into the plains near the foot-hills it straggles in small numbers in some years, frequenting well-sheltered spots. It is quite likely that this species moves but altitudinally in Sind and breeds in the Khirthar; the lower hills I have searched during the summer in vain. In the Soorjana pass I have seen them going to roost in winter in holes and crevices in the cliff often quite low down near the water's edge.

Eight males: wing 116–125; twelve females: wing 116–123 mm. These do not differ in size from Egyptian birds. Some Egyptian birds are paler than those I have seen from Sind, but are however more worn in plumage; by far the palest bird of a series comes from Fao; wear makes a considerable difference in paleness, and as some Egyptian birds do not differ at all from Sind ones, I consider that both belong to the same race.

Hirundo rustica rustica L.

The Common Swallow is abundant as a winter visitor and its distribution is entirely dependent on water, away from which only odd birds are met with. It arrives in Upper Sind early in August in numbers and lingers some time in that comparatively well watered part as only stragglers have reached Lower Sind by then, and it is not till September, and in very dry years the end of October, that they become numerous in the latter district. Most disappear again in March and few may be seen throughout April, possibly passage migrants from elsewhere; I have seen single birds on 2 and 26 May and 6 June. I have no evidence that it breeds in Sind; it breeds on the Mekran coast and of course in Quetta. In January both young of previous year and adults start a complete moult which is finished ere they depart.

Hirundo smithi filifera Steph.

The Wire-tailed Swallow is in the better watered parts a common though rather local bird; to Upper and Central Sind it is a summer visitor and is there much commoner than perhaps elsewhere; both Hume and myself failed to see it in these parts in the cold weather and Butler says it arrives on the E. Narra Canal in May. In the Karachi district however, which is the warmest part of Sind in winter, it is a constant resident though not present in great numbers, so that the birds from farther north must winter outside the province.

Mr. Ommaney tells me he knew of one which nested in a verandah of a bungalow in the canal area, and I suspect that those seen at Malir near Karachi were nesting under verandahs on house-tops, round which they were constantly flying, as there are no canal bridges there and none so far as I could ascertain were nesting in wells. At the Habb River several pairs nest annually in a small rocky cliff overhanging the river whence Mr. Ludlow has eggs, and probably odd birds seen occasionally in the hot weather at Karachi have come from that colony.

It is surprising to find that this bird is frequently referred to as *smithi*, described from the Congo, from which it differs markedly in the much longer "wires" in the tail and rather longer wings, though Reichenow (Vög. Afr. ii. p. 411) recognized the differences.

I have examined 14 males of each race with the following results:—

smithi: wing 109–114 (117) mm.

filifera: „ 113–122, mostly about 119, mm.

smithi: "wire" exceeds tip of next feather by 25–62, once 72 mm. (mostly 40–55).

filifera: "wire" exceeds tip of next feather by 62–138, mostly over 80 mm.

The colour of the crown varies a good deal, from chocolate to pale chestnut, partly due to wear and partly individually, but not geographically in India.

There is no colour difference between *smithi* and *filifera*.

Hirundo daurica erythropygia Sykes.

Murray places the Indian Red-rumped Swallow amongst a list which he or his collector added to birds of Sind. It was obtained in November at Pultem. Hume apparently saw the specimen, so that it was probably correctly named, but like all the birds in this list it must be open to doubt since in it appeared five species new to the Indian list which I have ascertained in reality came from Bushire, hence other localities may be mixed. This race, the resident one in the plains, is, so far as I know, not resident in Sind, though it is in Cutch and at Mt. Aboo ; stragglers might of course wander into Sind.

Hirundo daurica rufula Temm.

On 18 November, 1919, at Karachi in a sunny corner of the Sewage Farm, haunted in some years by Crag-Martins, I saw two Red-rumped Swallows, one of which I obtained. It is a bird of the year and compares well with similar young of *rufula* from farther west; it is too pale on the chestnut portions of the plumage and too long in the wing (113 mm.) for *erythropygia*. It is rather shorter in wing than most *rufula*, however it is not striated enough on the breast and rump for the young of *nipalensis*.

This is the first occurrence of this race in Sind and the plains of India, but is not unexpected as it is known to breed in northern Beluchistan.

[To be continued.]

XXXV.—*On a Collection of Birds from Acheen (Sumatra).*
By Baron R. Snouckaert van Schauburg, F.M.B.O.U.

Very little has, to my knowledge, been published on the birds of the most northern part of Sumatra, the ancient Sultanate of Acheen, for many years under Dutch rule. In fact, I only know of Hume's paper in 'Stray Feathers,' 1873, pp. 441–463, on a small collection brought together by

Mr. Davison, who made a very short stay in January and February 1873 on the coast of this, then rather inhospitable country; during this stay, only about thirty species were "seen" and some of them collected. Among the latter was a new species, *Suya albigularis*.

Recently, however, Mr. E. Jacobson, a well-known traveller and collector in the Dutch East Indies, kindly called my attention to another paper in the Proceedings of the U.S. Nat. Mus. vol. xxvi. no. 1318, pp. 485–523, by Ch. Richmond on a collection made by Dr. Abbott in 1901, in Loh-Sidoh Bay; only seventeen species are recorded from this locality.

Now, in the year 1920, Jonkheer F. C. van Heurn, a Dutch gentleman residing at Medan (Deli), made a trip to Lake Takengon, in the centre or thereabouts of Gajo-land (Acheen). This lake, situated at an altitude of about 1200 m., has a length of nearly 17 km., while its greatest breadth is not more than 5 km.; it is surrounded for the greater part by an extensive belt of reeds and other aquatic plants. The mountains around this fine sheet of water are covered with a more or less dense vegetation of conifers (*Pinus merkusii*).

Mr. van Heurn visited this region in March and April 1920, and stayed for about three weeks, during which time he collected examples of 57 species, none of which were new or very rare. He found many caverns inhabited by incredible quantities of Swifts (*Collocalia*), while the water-birds at this elevation proved to be of the same species as those found in the coastal swamps of Sumatra.

In the same year Mr. van Heurn collected birds in two different localities at a much lower level and situated in closer vicinity of the north-eastern coast, viz. at places (Kampongs) called Alas Peurba (200 m.) and Alur Djambu (50 m.). Here he succeeded in finding a few rather rare species, as the following list will show.

Rollulus roulroul (Scop.).

♂. Alas Peurba, 17 September.

Osmotreron olax (Temm.).

♂ and 2 ♂ ♂ juv. Alur Djambu, 11 November.

I suppose these three birds were of one family, as they were shot on the same day in the same place. The young are nearly full-grown and in transition to the fully adult male plumage.

Ptilinopus jambu (Gm.).

♂. Alas Peurba, 16 September.

Streptopelia chinensis tigrina (Temm. & Knip).

3 ♂ ♂ and an unsexed specimen. Takengon.

2 ♀ ♀. Alas Peurba, 26 September.

Poliolimnas cinereus (Vieill.).

♂ ♂. Takengon.

Gallinula chloropus orientalis Horsf.

7 ♂ ♂, 1 ♀, and an unsexed specimen. Takengon.

Tringa hypoleucos L.

4 ♂ ♂, 5 ♀ ♀. Takengon.

Gallinago stenura (Kuhl).

♂ ♂, ♀ ♀. Takengon.

Ardea purpurea manillensis Meyen.

♀. Takengon.

Butorides striatus javanicus (Horsf.).

5 ♀ ♀ and an unsexed specimen. Takengon.

One of these juveniles was shot 29 March.

Bubulcus ibis coromandus (Bodd.).

♀. Takengon.

Ixobrychus sinensis (Gm.).

♂ ♂, ♀ ♀, and a juvenile ♂. Takengon.

Ixobrychus cinnamomeus (Gm.).

♂. Takengon.

Phalacrocorax carbo (L.).

♂, 3 ♀ ♀, all in juvenile plumage. Takengon.

Spilornis cheela bacha (Daud.).

♀. Alur Djambu, 22 November.

Eurystomus orientalis orientalis (L.).

♀. Alur Djambu, 25 November.

Alcedo atthis bengalensis Gm.

2 ♂♂, 5 ♀ ♀. Takengon.

One of these birds is beautifully blue ("taprobana" colour of Kleinschmidt).

Ceyx enopopygius Oberh. (=*tridactyla* Pall.).

♂. Alas Peurba, 27 September.

Halcyon concreta (Temm.).

♀. Alas Peurba, 13 September.

Carcineutes pulchellus (Horsf.).

♂♂, ♀ ♀. Alas Peurba, 25, 26, and 30 September.

♂. Alur Djambu, 17 November.

Anthracoceros convexus (Temm.).

♂. Alur Djambu, 22 November.

Merops philippinus L.

♀ ♂, ♀ juv., ♂. Alas Peurba, 11, 18, 18, and 26 September.

The young bird lacks the lengthened rectrices

Nyctiornis amicta (Temm.).

♀. Alas Peurba, 23 September.

♂ ♀. Alur Djambu, 17 and 23 November.

Collocalia linchi linchi Horsf. & Moore.

♀ ad., ♂ juv., and 2 nestlings. Takengon, 2 April.

Pyrotrogon diardi sumatranus (Blas.).

Harpactes diardi sumatranus Blasius, Mitt. d. Geogr. Ges. u. d. Naturh. Mus. zu Lübeck. II. Reihe, Heft x. 1896, p. 7.

♀. Alas Peurba, 24 September.

W. Blasius (*t. c.*) gave, rather inconspicuously in the text, the name of *sumatranus* to the birds of this species from Malacca and Sumatra, and founded this distinction upon the coloration of the head being different from Bornean examples. I think this name can stand, and therefore *neglectus* Forbes & Robinson 1899 becomes a synonym.

Pyrotrogon kasumba (Raffl.).
♂. Alas Peurba, 27 September.

Cacomantis sepulchralis sepulchralis (S. Müll.).
♂. Takengon.

Chalcococcyx xanthorhynchus (Horsf.).
♀. Alur Djambu, 14 November.

Zanclostomus javanicus (Horsf.).
♂ ♀. Alur Djambu, 17 and 25 November.

Rhopodytes tristis elongatus (S. Müll.).
♀. Alas Peurba, 25 September.

Rhinortha chlorophæa (Raffl.).
♂. Alas Peurba, 14 September.
♀. Alur Djambu, 13 November.

Urococcyx erythrognathus erythrognathus (Hartl.).
♂ ♂. Alur Djambu, 12 and 22 November.

Chotorea mystacophanes mystacophanes (Temm.).
♂. Alas Peurba, 15 September.

Cyanops oorti oorti (S. Müll.).
♂. Takengon.

Psilopogon pyrolophus S. Müll.
♀. Takengon.

Picus vittatus vittatus Vieill.
♀. Alas Peurba, 11 September.

Picus puniceus observandus (Hartert).
♀ juv. moulting. Alas Peurba, 15 September.

Chrysophlegma miniatum malaccense (Lath.).
Pull. unsexed. Alur Djambu, 20 November.

Chrysophlegma mystacale Salvad.
♂. Takengon.

Chloropicoides (*i. e.* Gauropicoides) **rafflesii rafflesii** (Vig.).
♀. Alur Djambu, 18 November.
Stresemann (Arch. f. Naturg. 1921, p. 89) states that *Chloropicoides* Malh. antedates *Gauropicoides* Malh. by eleven years.

Blythipicus rubiginosus (Swains.).
Hemicircus rubiginosus Swains. Nat. Hist. B. W. Afr. ii. 1837, p. 150—West Africa, errore! patria designata: Singapore.
Pyrrhopicus porphyromelas (Boie) Rob. & Kl. 1918.
Lepocestes porphyromelas Rob. & Kl. 1919.
(Stresemann, *t. c.* p. 98, states that *porphyromelas* Boie is a nomen nudum.)
♀. Alas Peurba, 24 September.

Miglyptes tristis micropterus Hesse, Orn. Monatsber. 1911, p. 182.
Miglyptes grammithorax (Malh.) Rob. & Kl. 1918.
Miglyptes tristis grammithorax Rob. & Kl. 1919.
♂. Alas Peurba, 28 September.
Bornean birds have been separated by Hesse (*t. c.*) as *micropterus*. According to Stresemann, Sumatran examples are identical with these. Most modern authors consider *micropterus* as a subspecies of *tristis* Horsf., Java.

Miglyptes tukki (Less.).
♀. Alas Peurba, 30 September.

Hemicercus concretus coccometopus Reichenb.
♂ ♀. Alas Peurba, 26 September.

Thriponax javensis javensis (Horsf.).
♂ ♂. Alur Djambu, 23 November.

Calyptomena viridis Raffl.

♂ ♀ ♂. Alas Peurba, 13, 13, and 14 September.

Psarisomus dalhousiæ psittacinus (S. Müll.).

♀. Takengon.

Eurylaimus javanicus harterti v. Oort.

♀ juv. Alas Peurba, 28 September.

♂ ♀. Alur Djambu, 19 November.

Eurylaimus ochromelas Raffl.

♂ ♀. Alas Peurba, 24 September and 1 October.

Corydon sumatranus sumatranus (Raffl.).

3 ♂ ♂. Alas Peurba, 22 September.

Cymbirhynchus macrorhynchus lemniscatus (Raffl.).

♂ ♂ ♀. Alas Peurba, 15, 22, and 22 September.

♀ ♂ ♀. Alur Djambu, 12, 25, and 25 November.

All of these birds have some white spots on the outer rectrices, but they are restricted to the two outermost feathers and are variable. In one specimen the spot is only a faint white line.

Pitta granatina vanheurni Kloss.

♂ jun. Alas Peurba, 13 September.

Some examples (four or maybe five) of this species collected by Messrs. de Bussy, van Heurn and van Heijst in north-eastern Sumatra, have been separated by Mr. Kloss under the name of *vanheurni*. This action, Mr. van Heurn does not think justified.

Hirundo rustica gutturalis (Scop.).

1 ♂, 3 ♀ ♀. Takengon, all on 4 April.

Hirundo javanica Sparrm.

3 ♂ ♂, 1 ♀, and 2 ♂ ♂ juv. Takengon, shot 2 April.

Rhipidura albicollis atrata Salvad.

♀. Takengon.

Tchitrea paradisi affinis Blyth.

♀. Alur Djambu, 14 November.

Philentoma velatum (Temm.).
♂ ♀ ♂. Alas Peurba, 20, 20, and 24 September.

Rhinomyias pectoralis (Salvad.).
♂ juv., ♀. Alas Peurba, 19 and 27 September.

Culicicapa ceylonensis (Swains.).
♂. Takengon.

Artamides sumatrensis (S. Müll.).
3 ♀ ♀. Alas Peurba, 18 September.

Ægithina tiphia viridis (Bp.).
♂ ♀. Alas Peurba, 4 October.

Chloropsis viridis zosterops Vig.
♂ ♂. Alas Peurba, 24 and 25 September.
♂ ♂ ♀. Alur Djambu, 14, 18, and 26 November.

Chloropsis icterocephala (Temm.).
♂. Alas Peurba, 24 September.

Chloropsis cyanopogon (Temm.).
♀. Alur Djambu, 25 November.

Chloropsis venusta (Bp.).
♂. Takengon.

Hemixus malaccensis (Blyth).
♂ ♂. Alas Peurba, 30 September and 2 October.

Iole olivacea olivacea Blyth.
♂ ♂ ♀. Alas Peurba, 18, 24, and 27 September.
♂ ♀ ♂. Alur Djambu, 13, 13, and 15 November.

The forms of *I. olivacea* have been revised and worked out by Messrs. Robinson & Kloss in Ibis, 1918, p. 589. According to these gentlemen true *olivacea* is found in Sumatra, Java, Borneo, and the British part of the Malay Peninsula.

Microtarsus melanocephalus (Gm.).
♂. Alas Peurba, 11 September.
♀ ♂ ♂. Alur Djambu, 11, 13, and 13 November.

Criniger sumatranus Wardl. Rams.

♂ ♀ ♂. Alas Peurba, 16, 16, and 18 September.

♂ ♂ ♀. Alur Djambu, 15, 18, and 18 November.

I list these birds as above, *fide* Mr. van Heijst. I have not seen the original description in Ann. & Mag. Nat. Hist. 1882.

Alophoixus phæocephalus (Hartl.).

♂ ♂ ♀. Alur Djambu, 16, 18, and 18 November.

Alcurus leucogrammicus (S. Müll.).

♂ ♀. Takengon.

Trachycomus ochrocephalus (Gm.).

♂. Alas Peurba, 21 September.

Pycnonotus analis (Horsf.).

♂ ♂ ♀. Takengon.

Pycnonotus brunneus brunneus Blyth.

♂. Alur Djambu, 11 November.

It is not without a feeling of diffidence that I mention this bird under the above name. The status of these Bulbuls does not appear to be fully elucidated. Messrs. Robinson & Kloss wrote in their paper on van Heijst's collection (Journ. Straits Br. Roy. As. Soc. 1919, p. 113) :— "We have, pending a revision of the whole group, followed Oberholser in regarding the form of this bird with squamate pileum, reddish eyes, and dull brownish under surface as referable to Blyth's race, of which we have examined the greatly deteriorated type."

I am not aware that a revision of the group has yet been made. Having only one specimen it seemed rather difficult to assign the right place to it, and it is possible that my determination will ultimately prove to be wrong.

Pycnonotus bimaculatus barat Rob. & Kl.

♂ ♂ ♀ and a ♂ juv. Takengon.

Rubigula dispar dispar (Horsf.).

♂ ♀. Alas Peurba, 14 September.

It is perhaps, not far wrong to suppose that *R. johnsoni*,

described and figured by Count Gyldenstolpe in Kungl. Svenska Vetensk.-Akad. Handl. vol. 50, no. 8, p. 25, from eastern Siam, is a subspecies of *dispar*.

Glauconympha cyanea crinigera (Sharpe).
Irena criniger Sharpe, Cat. B. iii. 1877, p. 267.
Irena puella crinigera Rob. & Kl. 1918.
4 ♂ ♂. Alas Peurba, 20, 21, 25, and 30 September.
3 ♀ ♀. Alas Peurba, 30 September and 1 & 2 October.
♂. Alur Djambu, 24 November.
(*Glauconympha* gen. nov. Oberholser, Journ. Wash. Acad. Sci. vii. no. 17, 1917, p. 537.)

Garrulax bicolor Hartl.
♂ ♂ ♀ and a ♀ juv. Takengon.
The young bird is not fully grown and has downy feathers over the whole underside: shot 1 April.

Rhinocichla mitrata mitrata (S. Müll.).
♂ ♂ ♀. Takengon.

Setaria cinerea (Eyton).
♂ ♂ ♀. Alas Peurba, 13, 13, and 20 September.

Stachyris larvata (Bp.).
♀ ♀. Takengon.

Stachyris nigricollis (Temm.).
♂ ♀. Alas Peurba, 19 September.

Stachyris maculatus pectoralis (Blyth).
♂ ♀ ♀. Alas Peurba, all three 19 September.

Stachyridopsis chrysæa bocagei (Salvad.).
♂ ♂. Takengon.

Arrenga cyanea melanura Salvad.
♂. Takengon.

Heteroxenicus leucophrys (Temm.).
♂. Takengon.

Sibia picaoides simillima (Salvad.).
♂ ♂ ♀. Takengon.

Kenopia striata (Blyth).

♂. Alas Peurba, 20 September.

So far as I know, this is only the second specimen on record from Sumatra. The first was shot by Mr. van Heijst near Sungei Tasik, Medan, 24 October, 1919.

Copsychus saularis musicus (Raffl.).

♂ ♀. Takengon.

♂ moulting. Alas Peurba, 26 September.

Kittacincla macrurus macrurus (Gm.).

♂ juv. Alas Peurba, 16 September.

♂ ♂. Alur Djambu, 19 and 20 November.

♂ juv. Alur Djambu, 17 November.

Trichixus pyrrhopygus Less.

♂ juv. Alur Djambu, 18 November.

This bird is the second specimen of the species recorded from Sumatra. The first was also collected by Mr. van Heijst at Sungei Tasik, 24 October, 1919.

Acrocephalus arundinaceus orientalis (Temm. & Schl.).

♂ ♀ ♀. Takengon.

Cisticola cisticola cursitans (Temm.).

♂ ♀. Takengon.

These two birds agree very well with the description of *cursitans* given by Dr. Hartert, Vög. pal. Fauna, p. 613.

Phylloscopus borealis xanthodryas Swinh.

♂ ♀. Takengon, 30 March.

Both birds are in a bad state and in moult; it is therefore somewhat difficult to decide whether they belong to *P. borealis borealis* or *P. b. xanthodryas*. I ventured to place both in the latter subspecies because I find in one of them the first primary much developed, as much so as in typical specimens of *xanthodryas*. The other bird has no first primary on account of the moult.

Suya superciliaris albigularis Hume.

♂ ♂ ♀. Takengon.

Hemipus picatus (Sykes).
♂ ♂. Takengon.

Platylophus coronatus coronatus (Raffl.).
♂. Alur Djambu, 17 November.

Lanius schach bentet Horsf.
♂ ♀. Takengon. Both, but especially the male, very much in moult.

Lanius tigrinus Drap.
♀ and ♀ juv. Alas Peurba, 17 and 21 September.

Parus major malayorum Rob. & Kl.
3 ♂ ♂ and ♂ ♀ juv. Takengon.

Poliositta azurea expectata (Hartert):
One specimen labelled ♀, which I believe to be wrong. Takengon.

Platysmurus leucopterus (Temm.).
3 ♂ ♂. Alas Peurba, 20, 22, and 23 September.
♂ ♂. Alur Djambu, 16 and 22 November.

Dendrocitta occipitalis (S. Müll.).
♂. Takengon, in much worn plumage.

Buchanga leucophæa batakensis Rob. & Kl.
3 ♂ ♂, 1 ♀ and a ♂ juv. Takengon.
Two of the males in ragged, moulting plumage. The young bird, not nearly full-grown, was shot 29 March.

Dissemurus paradiseus platurus (Vieill.).
♂ ♂. Alas Peurba, 14 and 17 September.
♂ ♀. Alur Djambu, 16 and 17 November.
Also an unlabelled specimen. All these birds were in a different state of plumage.

Bhringa remifer remifer (Temm.).
♂. Takengon.

Oriolus maculatus Vieill.
♂ med. and ♂ juv. Takengon, shot 26 March.

Oriolus xanthonotus Horsf.
♀ ♀. Alas Peurba, 27 September and 1 October.

Oriolus cruentus consanguineus (Wardl. Rams.).
♂ and ♂ juv.
The juvenile of this species has been described by Messrs Robinson & Kloss (Journ. Str. Br. Roy. As. Soc. no. 81 1920, p. 112).

Artamus leucogaster (Valenc.).
♂ ♀. Takengon.

Gracula javana javana (Cuv.).
♀ ♀. Alur Djambu, 17 and 23 November.

Aplonis panayensis strigata (Horsf.).
♀ juv. Takengon.
♂. Alas Peurba, 23 September.

Munia maja (L.).
5 ♂ ♂. 3 ♀ ♀. Takengon.

Munia punctularia nisoria (Temm.).
♂ ♀. Takengon.

Erythrura prasina (Sparrm.).
♂. Takengon.

Motacilla cinerea melanope Pall.
♂ ♀. Alur Djambu, 13 and 15 November.

Motacilla flava simillima Hartert.
♂ ♂ ♀. Takengon, moulting examples, all shot 4 April.

Dendronanthus indicus (Gm.).
♂ ♂ ♀ ♂. Alas Peurba, 11, 16, 16, and 21 September.

Æthopyga temminckii (S. Müll.).
♂. Takengon.

Cyrtostomus ornatus (Horsf.).
4 ♂ ♂, 1 ♀. Takengon.

Anthreptes hypogrammica hypogrammica (S. Müll.).

♂ ♀. Alas Peurba, 15 and 20 September.

♂. Alur Djambu, 15 November.

According to Robinson & Kloss (Journ. Str. Br. Roy. As. Soc. 1920, p. 112) Hartert's *A. h. intensior* from Borneo seems to be of somewhat doubtful status.

Jonkheer van Heurn may be congratulated with his success in collecting three examples of this rare species. To show its rarity in Sumatra, I have only to refer to Robinson & Kloss's words in 'The Ibis,' 1918, p. 592.

Mr. van Heijst collected one specimen in Deli (N.E. Sumatra).

Arachnothera longirostris longirostris (Lath.).

♂. Alas Peurba, 14 September.

Arachnothera affinis (Horsf.).

♂. Alur Djambu, 11 November.

XXXVI.—*Some Cretan Birds.*

By Brigadier-General H. R. Kelham, C.B., M.B.O.U.

These field-notes were made during the military occupation of Crete in 1897–98, principally in the neighbourhood of Candia, but I also visited Canea and the Alikanu Marsh, lying between that town and the hills, while observations were made during a month spent after ibex among the mountains of Sphakia.

Latterly the disturbed state of the country, owing to the fighting between the Moslems and Christians, rather limited my wanderings.

In Sphakia the scenery was very Himalayan, reminding me of my old hunting grounds in Kashmir, while to make the surroundings even more realistic, a huge Lämmergeyr (*Gypaëtus barbatus*) would often be seen sailing along the hillside.

My bivouac overlooked a deep, boulder-strewn nullah beyond which, five miles away could be seen spread out like

a map the elevated plain of Omalos, a huge depression over a mile in diameter, surrounded by high peaks (8000 ft.), while at its southern end a curious outlet led into a deep ravine, then far away north the promontory of Kissimo jutted out into the blue waters of the Mediterranean.

I follow the sequence and nomenclature of the B. O. U. List, 1915.

Turdus merula.

Plentiful in the Sphakia ravines during September, especially near Xiloskala Pass.

Monticola saxatilis.

Among the boulders in Sphakia it was fairly plentiful.

Œnanthe œnanthe and **Saxicola rubetra** were in considerable numbers during the autumn. In my notes is:—"1 Sept., Omalos Plain. It was a lovely fresh morning with quite a bite in the air when I strolled from my tent down to the well, the only one anywhere near, for during the summer water is scarce in the highlands of Crete. The shepherds had utilized dug-out logs as drinking troughs for their cattle, and innumerable little birds assembled morning and evening to quench their thirst and bathe, allowing me to stand within a few paces of them. Most were Wheatears (*Œnanthe œnanthe*), Whinchats (*Saxicola rubetra*), Stonechats (*Saxicola rubicola*), and Wagtails, the Wheatears in such numbers, not only at the water but all over the surrounding hills, that I feel sure they were migrants. Plumage of the back pale grey, rusty on the throat and breast, a dark streak through the eye, supercilium and rump white, a black bar across the tail."

Phœnicurus phœnicurus.

I saw several Redstarts near Anapoli in September.

Sylvia atricapilla.

Anapoli during the autumn.

Parus major, also **Parus cæruleus**, were common among the pines in Sphakia.

Troglodytes troglodytes.

Common in the boulder-strewn ravines near San Maria, Sphakia.

Motacilla alba.

In flocks on the cultivated fields round Candia in November, where I shot a few specimens. Length 7 in., chin and throat pure white, black-gorged on the breast; forehead, face, and abdomen dull white; outer tail-feathers white, central ones black.

Motacilla flava.

Omalos Plain, in considerable numbers early in September.

Anthus pratensis.

Plentiful round Candia during the winter.

Oriolus oriolus.

Often seen during the autumn.

Lanius excubitor.

On 1 September I shot, what I put down as this species, on Omalos Plain. It had no black patch on its forehead as is the case in the Eastern Shrike.

Hirundo rustica.

I found this Swallow breeding in Crete during June and July.

"Candia, 24 July. To-day I rode out to visit our outpost at Anapoli.

"The tents were pitched in an olive-grove, one shared by the two officers, and in it a pair of Swallows had elected to breed, showing the most extraordinary tameness, for not only had they entered and built their nest against the tent-pole but passed in and out within a few inches of my head quite regardless of my presence, in fact, often perching on the table.

"The two young birds were fledged and nearly ready to fly but were being constantly fed by their parents: the occupants of the tent had fixed up an old newspaper round

the pole to save them and their kit from the birds' droppings, a very necessary precaution which at first puzzled the birds, but they very soon became accustomed to it. I jotted down the plumage of the male as he sat on the back of a chair within a foot of me: forehead and throat bright chestnut, with a black band just below, underparts white, becoming rusty on the vent, tail very long and forked."

Riparia rupestris.

Seen in September among the highest mountains in Sphakia.

Certhia familiaris.

Several seen near Lakkos at 4000 ft.

Carduelis elegans.

Common throughout the year, breeding in Crete. On 30 August, on Omalos Plain, I saw a fully-fledged family of Goldfinches, able to fly, but still being fed by their parents, in which I could detect no difference of plumage from our English bird.

Coccothraustes coccothraustes.

I saw a Hawfinch in the olive-groves at Anapoli in September.

Fringilla cœlebs.

The Chaffinch is common in Crete, I believe breeding there, but I did not find a nest.

Sturnus vulgaris.

Candia, during the winter.

Pyrrhocorax pyrrhocorax.

While after ibex in the Sphakia mountains I constantly saw the red-billed Choughs, noticeable birds on account of their strange metallic-sounding voice and blown-about flight, like that of a butterfly in a wind.

Garrulus glandarius.

Jays were common among the hills at from 4000 to 6000 feet.

Corvus cornix.

Seen close to Candia. I saw Ravens driving Hooded Crows away from their feeding-grounds.

Corvus corax.

The Raven is very plentiful in Crete, especially along the coast where, instead of being solitary or in pairs, I noticed that it collected in large flocks, a favourite resort being the waste land just west of Candia, where it shared the filth from the offal heaps with the pariah dogs.

These large gatherings dispersed in the early spring when the birds pair and nest in the rocky ravines along the coast, building on ledges.

I knew of two nests, just north of Anapoli, and obtained a young bird which accompanied me to England, and lived for many years; a most amusing but troublesome pet. It learned to talk and would repeat its name: "Bashi! Poor Bashi, Poor Bashi," in tones of much commiseration.

Plumage, when adult, black with rich metallic blue gloss; irides grey.

Judging by its gregarious habits I at one time thought this Cretan Raven might be *Corvus tingitanus*, but Mr. Sclater informs me such is not the case.

Alauda arvensis.

Plentiful in large flocks on the ploughed land round Candia during the winter; I shot several. Length 7¼ in.; outer tail-feathers and outer webs of secondaries white.

Alauda cristata.

Candia, during the winter. A specimen I shot was 7¼ in. in length, under surface of the wings and tail rufescent, the short crest had the brown feathers dark-centred. In my notes is:—"15 August: Lark, a crested species, plentiful on the rough land near Candia."

Micropus apus.

Common round Candia, breeding there.

Micropus melba

I saw several in Sphakia during September, also at Vigla.

Caprimulgus europæus.

The European Nightjar was very plentiful in Crete during the migration.

On 28 September I saw a small party of them, flying low over the sea, arrive from the north-west and settle, very tired, on the battlements of Candia.

Alcedo ispida.

Common, especially at the Amyro Marsh, which I see is sometimes called Halmyros.

Coracias garrula.

Several Rollers seen during September, apparently migrating.

Merops apiaster.

Common during the autumn migrations. I saw a flock near Lakkos on 9 September.

Upupa epops.

The Hoopoe was common in the olive-groves round Candia during September; the earliest date on which I saw it was 16 August.

Gypaëtus barbatus.

The Lämmergeyr, or Bearded Vulture, was common among the mountains of Sphakia, where it undoubtedly breeds.

While scanning the hills for ibex I often used to see this magnificent bird sailing along the mountain-side, following every undulation of the ground apparently without a movement of its long, pointed wings, but if carefully watched through glasses one could detect a slight tilt and a sideways move of its wedge-shaped tail as it altered its course in order to more closely inspect some object on the slopes below.

It is doubtful if the Lämmergeyr actually kills, or whether it confines itself to bodies it may come across.

For several years I studied its habits in the Himalaya, where it was very plentiful, especially among the outer ridges at from 7000 to 8000 feet, but never saw nor even heard of it attacking any living thing, though I often saw it pass close over ibex with young, or herds of goats.

They used to frequent the military slaughter-houses and carry off bones and pieces of offal, sometimes passing within thirty yards of where I stood.

Gyps fulvus.

I saw several Griffon Vultures in Sphakia; also among the hills near Vigla.

Hieraaëtus fasciatus.

On 27 October I shot a Bonelli's Eagle, while in hot pursuit of a wounded Snipe: the pear-shaped streaks on the underparts were very pronounced. A pair frequented the Amyro Marsh, and I saw several among the Cretan mountains.

Circus æruginosus.

I often saw Marsh Harriers quartering the ground at the Amyro Marsh.

Several passed on migration at the end of September.

Buteo ferox.

On 1 October I saw several of these Buzzards apparently migrating; they were being chased and bullied by the Ravens, which is the way they treated all intruders on their domain along the coast.

Accipiter nisus.

Several Sparrow-Hawks were seen near Candia, and on 9 November I noticed one chase right out over the sea and kill a Snipe I had fired at and slightly wounded.

Falco tinnunculus.

Kestrels were plentiful, breeding in Crete.

Phalacrocorax carbo.

Common. On 9 November five were busy fishing close below the battlements of Candia, and I frequently saw them

along the coast: one I shot at the end of October had all the upper plumage brown, the feathers light-edged, legs fleshy yellow, length 31½ in., probably a bird of the year, as Col. Meinertzhagen (Ibis, 1921, p. 137) says:—"It breeds on the small rocky islands near Candia."

Ardea cinerea.

Seen in considerable numbers during the autumnal migration.

Ardea purpurea.

On 1 October I saw a long line of Purple Herons flying low over the sea, evidently migrating.

On 13 October I flushed eight out of the Amyro Marsh.

Egretta alba.

I saw one standing in the Amyro Marsh on 12 October.

Mareca penelope.

I shot one in November in the Amyro Marsh.

Anas boschas.

I shot several during the winter in Amyro Marsh, but they were not plentiful, nor in fact were any wildfowl, there being few suitable places for them anywhere in the neighbourhood of Candia.

Querquedula crecca.

Fairly common in Amyro Marsh during the winter, but I also saw some there in July, probably breeding.

Nyroca ferina.

Amyro Marsh, during November.

Nyroca nyroca.

I shot a few of these White-eyed Pochard near Candia.

Columba palumbus.

I saw many among the woods on the Sphakia hills.

Columba livia.

Plentiful along the coast. I shot several from the caves overlooking the sea. Very numerous at Standia and Paximadi.

Caccabis græca?

Fairly plentiful throughout Crete, especially among the barren ridges near Anapoli: I also found several coveys in the highlands of Sphakia, near Lakkos, and the Omalos Plain.

I celebrated the first of September by working the rocky ground near Anapoli, very rough walking and the heat intense, but I got six brace of these red-legged Partridges, among them four young birds, as big and strong on the wing as their parents. I also shot several near Vigla, Amyro, and Lakkos—in fact, they seemed fairly well distributed throughout Crete.

They were very similar to all the other Red-legged Partridges, but these seemed to be decidedly smaller than the well-known Chukor of the Indian hills.

Coturnix coturnix.

Scarce, I shot a few round Candia, three on 4 December, which points to their being resident.

Rallus aquaticus.

Common in the Amyro Marsh in September and October, as was **Porzana maruetta** and **Gallinula chloropus**, the last in considerable numbers.

Fulica atra.

I saw two Coots on a small marsh near Anapoli on 13 November, also a few at Amyro during the winter.

Œdicnemus œdicnemus.

In my notes :—"18 July. Walked to the foot of the low hills five miles west of Candia. On the stony ground along the coast I saw a party of eight Norfolk Plover, and shot two, one being a young bird; on the same ground, on 16 August, I found them in great numbers among the sand-hills and shot three, but must have seen over a hundred, many of them this year's birds, so conclude they breed near where I found them, probably in June.

"In those I examined I could see no difference from the Norfolk Plover I have shot in Spain, Morocco, and Malta.

Charadrius apricarius.

I shot several near Candia during November and December.

Vanellus vanellus.

Shot one out of a huge flock on the low ground near Candia, on 22 November, with them were several Golden Plover: very cold weather and a gale blowing.

Scolopax rusticola.

Fairly plentiful in November, especially after stormy weather, in the wooded gullies running down to the sea a few miles west of Candia; I have known from eight to twelve shot in a day.

During December several were shot near Pachides.

Gallinago gallinago.

Common during the winter. I shot many in Amyro Marsh.

The best "bag" I know of was 16 couple in Alikanu Marsh, near Canea. Snipe-shooting in Crete during the fighting between the Moslems and so-called Christians was not all joy.

One November afternoon I was shooting a small marsh, situated between the opposing forces. The Christians were holding the opposite hills, some 1200 yards beyond the marsh. I had shot a few Snipe, when "phutt" came a bullet into the mud, then another, so, though the range was long and the shooting bad, I thought it was time to move. Later on I revisited the marsh, getting four couple of Snipe and two Teal, but took with me my soldier-servant, who waded fifty yards behind me carrying a Union Jack on a long stick, to let the Christians know I was a long-lost brother, not a wearer of the fez, but I doubt if Snipe have often been pursued under such peculiar circumstances.

Amyro (or Halmyros) Marsh was the best place near Candia for Snipe and Waders: at its head a limestone cliff rose abruptly from a very deep pool of blue-green water,

out of which a stream meandered through the swamp till it flowed into the sea over the shingle.

Limnocryptes gallinula.

Jack Snipe were fairly plentiful during the winter: on one occasion I shot eight.

Totanus ochropus.

Common along the coast, as was *Totanus totanus*.

Numenius arquata.

Very plentiful during the winter on the sandhills along the coast.

Numenius phæopus.

I failed to identify the Whimbrel, but the late Sir Herbert Chermside, at that time British Commissioner in Crete, assured me that he had seen it there, also that during April a specimen of the Spur-winged Plover (*Hoplopterus spinosus*) had been shot near Candia; being a naturalist and a sportsman he was probably correct.

Sterna hirundo.

"Candia, 27 September. On the edge of a shallow overflow of the sea I to-day flushed a large flock of these Tern, and with them a few very small ones, with black markings on their face, probably *Sterna minuta*."

Larus argentatus.

"Candia, 13 October. To-day while sailing along the coast I passed through flocks of the Mediterranean Herring-Gull, so close that I noted their plumage: the irides were straw-colour, beak and legs yellow, the former with a red blotch on the lower mandible.

"Another species, about 23 in. in length, had dark brown irides, beak black, legs flesh-colour, plumage white mottled with dark brown, broad terminal band of brown across the tail, inner webs of primaries and tips of secondaries white, but the Gulls, with their many changes of plumage, are difficult to identify."

Pelecanus onocratalus.

Only once met with in Crete.

"Candia, 2 December. A beautifully calm day, and sitting majestically on the smooth sea, five huge white Pelicans came slowly swimming under the battlements.

"An hour later one of my men came to tell me that one of the Pelicans had drifted ashore, and that they had it in the barrack-room; I found its captors drying it in front of a fire, and trying to feed it from a half-opened tin of sardines from the Canteen, their great man on birds having told them that Pelicans fed on fish.

"Needless to say the bird died; it measured nearly 10 ft. across the wings; primaries black with white shafts, wing-coverts and the scapulars dark brown, with chestnut-brown tips to the feathers, back, head and underparts nearly white, legs olive-black. I think it was an immature bird."

Puffinus kuhli.

This species, also *Puffinus yelkouan*, were common along the coast. I did not find a nest, but the following experience of their breeding, also of *Thalassidroma pelagica*, on the Island of Filfla, a few miles south of Malta, may be of interest.

"Malta, 9 May, 1875. Visited Filfla, and found many nests of the Cinereous Shearwater (*Puffinus kuhli*), if a slight depression in the ground under boulders can be so named.

"Their first laying must be early, as every nest contained a young bird of from one to three weeks old.

"During the day the Shearwaters retire into holes and crevices among the rocks, issuing forth late in the afternoon to feed; I caught two but set them free, and noticed that owing to their length of wing they had difficulty in rising from level ground and ran to the edge of the cliff, then launched themselves into the air.

"On 11 July I revisited Filfla, and found any number of nests containing eggs, but nearly all were incubated, though

I obtained a few good specimens fairly fresh; on this occasion I was apparently a little late for the second laying. The one large white egg, measuring 2·8 in. by 2 in., was laid on the bare soil among the debris of boulders fallen from the cliffs and, as a rule, within a few yards of the sea.

"While sitting, the old birds uttered a loud, hoarse croak, which disclosed their whereabouts, but if incautiously handled, they gave a severe bite. They also vomited a nasty green oil with which the rocks were much stained and which had a peculiar, strong musky odour, as also had the birds and their eggs.

"I saw several specimens of *Puffinus yelkouan*, but failed to find a nest on Filfla, but obtained eggs from the cliffs near Sclendi, in Gozo, at the end of April where, at the same time, there were any number of eggs of the Mediterranean Herring-Gull, *Larus argentatus*, the nests being on ledges along the precipitous cliffs.

"On Filfla on 22 June, the Shearwaters' nests mostly contained a freshly-laid egg, only a few being near hatching."

Thalassidroma pelagica.

"Malta, 1875. On 11 July, while clambering over the boulders at the foot of the Filfla cliffs, a faint cry came from under the rocks, and quite a foot underground I found a burrow in which sat a Petrel, disclosing an egg as it crawled away squeaking; the egg was white with a ring of faint purple-brown freckles at one end: it measured 1·2 in. by ·75 in."

In the following summer I again visited Filfla, and found nests with eggs of this Petrel during the last week in June; the old birds let me lift them off their egg, but squeaked loudly, and vomited a green oil similar to the filth exuded by the Shearwaters.

XXXVII.—*On a Collection of Birds made in the Sudan by Major S. S. Flower, O.B.E., in December* 1920 *and January and February* 1921 ; *and some remarks on "A List of the Birds of the Anglo-Egyptian Sudan" by W. L. Sclater and C. Mackworth Praed.* By M. J. Nicoll, M.B.O.U.

The following paper is based on a small collection of birds made by Major S. S. Flower during a visit to the Sudan in December 1920, January and February 1921, and which has been placed in my hands for determination and reporting on.

I have taken the present opportunity to add to this account a few remarks on some Sudan birds other than those contained in the collection under review but mentioned by Messrs. Sclater & Praed in their paper recently published in 'The Ibis.'

In the present collection one new race is represented, i. e. *Galerida cristata halfæ*, which I have already described in the Bull. B. O. C. vol. xlii, p. 7. The type of this form and one other example are now in the Tring Museum, the remainder of the collection is in the Giza Zoological Museum.

The specimens of *Pycnonotus barbatus arsinoë* from Halfa and the examples of *Hoplopterus spinosus* from different localities in the Sudan are worthy of further examination when a larger series is available.

Œnanthe isabellina (Cretzschmar).

1 ♂. Um Ruaba, Kordofan ; ♂. Singa, Blue Nile; ○. Kabashia, Berber; 2 ♀. Halfa. Dec. 1920, Jan. Feb. 1921.

It is interesting to note that all these examples are of the brown phase, or race, and unlike all the other specimens in the Giza Museum from the Sudan, which are very grey on the upper parts.

Œnanthe œnanthe œnanthe.

♂ ♀. Um Ruaba, Kordofan, Dec. 1920. ♂. Singa, Jan. 1921.

Œnanthe hispanica melanoleuca (Güldenstädt).

♂. Sennar, Dec. 1920. ♀. Um Ruaba, Kordofan, Dec. 1920.

Œnanthe deserti deserti (Temminck).

5 ♂, 3 ♀. Kabashia, Berber, Jan. 1921. 2 ♂. Halfa, Feb. 1921.

The two forms of Desert Chat which occur in northern Africa are *Œ. d. deserti*, the eastern form, and *Œ. d. homochroa*, the western form. Both occur as residents in Egypt, though there appears to be a slight migration of the western form in spring.

In my 'Handlist,' page 3, I wrongly used the name *atrogularis* for the eastern race.

Œnanthe lugens persica (Seebohm).

♀. Halfa, Feb. 1921.

The winter range of this Chat extends to Egypt and the Sudan. I have an adult female which I shot at Abu Hamed in winter, and we also have two winter specimens from Upper Egypt.

The western race of *lugens* has occurred in Egypt; an adult female, shot by myself in Giza Province on 24. ii. 1909, is in our Museum.

The actual meeting place of *O. l. lugens* and *O. l. halophila* is not known, but I obtained a pair of adult birds near the Giza Pyramids, getting into breeding condition, on 28 February, 1921. The male is a typical *halophila*, and the female *lugens lugens*!

Galerida cristata halfæ Nicoll.

Galerida cristata halfæ Nicoll, Bull. B. O. C. vol. xlii, 1921, p. 7.

3 ♂, 4 ♀. Halfa, Feb. 1921.

This interesting race, occurring between the ranges of *G. c. altirostris* and *nubica*, was hardly a surprise to me as I had seen, though not obtained, examples in 1910.

As I have stated before, I cannot agree with my friend Hartert on his later nomenclature of these Larks. The name

altirostris, given by Brehm in 'Vogelfang' 1855, must be used for the Egyptian, and not for the Dongola bird. The error has been repeated by Sclater & Praed in their paper (Ibis, 1918, p. 607). They also are in error in assuming that the Egyptian "*altirostris*" is the same as the Dongola bird, which is wrongly called *altirostris* by Hartert. The two forms are most distinct. The authors, while adopting Hartert's views, use the older name of Brehm's for the Upper Egyptian forms (1855), and include the Dongola bird under this form! Thus making "confusion worse confounded."

Calandrella brachydactyla brachydactyla (Leisler).

♀. Kabashia, Berber, Jan. 1921.

Calandrella brachydactyla hermonensis Tristram.

Calandrella brachydactyla rubiginosa Nicoll, 'Handlist,' p. 38.

1 ♀, 2 ○. Kabashia, Berber, Dec. 1920.

This appears to be the first record of this well-marked race from the Sudan. I have other winter specimens in our Museum from Khartoum. This race, which has been found breeding in Egypt, is easily separable from the typical form by its paler, more sandy, coloration, and by the rufous coloration of the crown of the head.

Calandrella brachydactyla longipennis (Eversmann).

1 ♂, 1 ○. Kabashia, Berber, Jan. 1921 and Dec. 1920.

These are quite typical *longipennis*, and the occurrence of this race in the Sudan is now recorded for the first time.

Passer domesticus niloticus Nicoll & Bonhote.

Passer domesticus halfæ Meinertzhagen, Bull. B. O. C. xli. 1921, p. 67.

17 ♂, 5 ♀. Halfa, Feb. 1921.

I regret that I am unable to agree with Meinertzhagen. The series collected by Flower are not separable from birds from other parts of Egypt. Meinertzhagen gives, as a distinguishing character, a larger amount of chestnut on the

upper parts. This is not borne out in our series, and it must be remembered that in Upper Egypt, where it is warmer, male Sparrows assume summer plumage earlier than they do in Lower Egypt. I do not know in what month the material seen by Meinertzhagen was collected. I suspect that his birds were more advanced than those collected by Flower. In full breeding plumage, a male Sparrow from Lower Egypt is most remarkably different from a bird in winter plumage.

The races *P. d. alexandrinus* Madarasz, and *P. d. chephronsis* Phillips, are indistinguishable from *niloticus*.

Passer d. niloticus breeds from the coast of the Mediterranean to, at least, as far south as Halfa. At Abu Hamed, Berber Province, and Merowe, in Dongola, there occur Sparrows which, except for their slightly shorter wings, are identical with *niloticus*. At the same places, however, *P. d. arboreus* occurs, and the examples under discussion are probably hybrids.

Passer hispaniolensis hispaniolensis (Temminck).

♂. Halfa, Feb. 1921.

In January 1911 I shot a Spanish Sparrow at Merowe, Dongola Province, and this, the first example recorded from the Sudan, I assign to the typical race. I have lately, through the courtesy of the Government Entomologist of the Wellcome Research Laboratories at Khartoum, been enabled to examine a series of *Passer hispaniolensis* collected recently in Dongola Province, and these I find to be all of the eastern race *P. h. transcaspicus*.

Since my 'Handlist' was published I have identified Egyptian winter-shot examples of this eastern race.

Emberiza cæsia Cretzschmar.

♂. Sennar, Jan. 1921.

Serinus leucopygius (Sundevall).

1 ♂, 2 ♀. Um Ruaba, Kordofan, Dec. 1920.

Spiloptila clamans (Temminck).

2 ♀. Um Ruaba, Kordofan, Dec. 1920.

Lagonosticta senegala subsp. ?
♀. Halfa, Feb. 1921.
This bird was trapped by a native boy, and was probably an escape.

Sitagra luteola (Lichtenstein).
1 ○. Um Ruaba, Kordofan, Dec. 1920. 1 ♂, 1 ○. Singa, Jan. 1921. 1 ♀. Sennar, Jan. 1921.

Pyrrhulauda leucotis melanocephala (Lichtenstein).
♂. Um Ruaba, Kordofan, Dec. 1920.
This specimen has practically entirely black lesser wing-coverts.

Riparia paludicola minor (Cabanis).
♂. Singa, Jan. 1921.

Munia cantans (Gmel.).
One male, from Um Ruaba, Dec. 1920, probably belongs to Mearns's race *Aidemosyne inornata*, as probably does one example from the same locality now living in the Giza Zoological Gardens.

Passer luteus (Lichtenstein).
♂. Um Ruaba, Kordofan, Dec. 1920.

Lanius excubitor pallidirostris Cassin.
1 ○. Um Ruaba, Kordofan, Dec. 1920.

Lanius excubitor leucopygos Hemp. & Ehrenb.
1 ○. Kabashia, Berber, Dec. 1920.

Phylloscopus collybita collybita (Vieillot).
2 ♂. Halfa, Feb. 1921.

Spreo pulcher (Müller).
1 ○. Kabashia, Berber, Dec. 1920.

Anthus cervinus (Pallas).
♂. Sennar, Jan. 1921.

Motacilla feldegg melanogriseus (Homeyer).

♂. Um Ruaba, Kordofan, Dec. 1920.

I prefer to separate the Black-headed Wagtails from the Blue-headed form.

There are several "Yellow Wagtails" in this collection, but as they are young and female birds, it is not possible to identify them.

Motacilla feldegg feldegg Michahelles.

♂. Singa, Jan. 1921.

Motacilla flava flava Linnæus.

1 ♂. Um Ruaba, Kordofan, Dec. 1920. 3 ♂. Singa, Jan. 1921.

Corvus ruficollis ruficollis Lesson.

2 ♂, 1 ♀. Halfa, Feb. 1921.

These are typical large-billed examples and well match specimens from other parts of Egypt. The Brown-necked Raven is, in my opinion, a different species and not a race of *C. corax*. There are, moreover, two distinct forms, *C. r. ruficollis* and *C. r. infumatus*. The latter apparently occurs at or near Suez, in Egypt, and in parts of the Sudan. I have not yet seen a typical *ruficollis* from south of Halfa.

Corvus albus Müller.

♂. Um Ruaba, Kordofan, Dec. 1920. ♂. Sennar, Jan. 1921.

Trachyphonus margaritatus margaritatus (Cretzschmar).

♂ ♀. Kabashia, Berber. Dec. 1920.

Campethera nubica (Gmelin).

♂. Um Ruaba, Kordofan, Dec. 1920.

Ceryle rudis rudis (Linnæus).

♂. Singa, Jan. 1920.

Merops orientalis viridissimus Swainson.

Two sexed ♀ ♀, probably ♂ ♂. Kabashia, Berber, Jan. 1921.

I do not understand Sclater and Praed when they say that

the wing measurements of specimens of *M. o. cleopatra*, in the British Museum, average 63 mm. Those in the Giza Museum average 92 mm. ; over 20 measured.

The name *lamark* used by S. & P. is antedated by *orientalis*.

Pycnonotus barbatus arsinoë (Lichtenstein).

A pair from Halfa, Feb. 1921, are decidedly different in coloration from any of our series at Giza. It would be interesting to compare a large series from the vicinity of Halfa.

Bubo africanus cinerascens Guerin.

♀. Singa, Jan. 1921.

Tyto alba alba (Scopoli).

♀. Sennar, Jan. 1921.

The Barn-Owl varies considerably throughout its range in Egypt and the Sudan. I have seen specimens in Egypt as dark as, or even darker than, the so-called *maculata*, of the Sudan. On the other hand, some specimens from Khartoum, which I have seen, are as pale and little spotted as are the majority of Egyptian examples.

Otus scops scops (Linnæus).

♀. Sennar, Jan. 1920.

Falco biarmicus abyssinicus Neumann.

A young ♀. Singa, Jan. 1921.

Falco tinnunculus tinnunculus Linnæus.

♂. Um Ruaba, Kordofan, Dec. 1920. 2 ♀. Halfa, Feb. 1921.

These agree well with the pale Kestrels which pass through Egypt, and must at present be assigned to this form though they seem to be a little paler than British examples.

Milvus migrans parasitus (Daudin).

1 ♂, 1 ♀. Sennar and Singa respectively, Jan. 1921.

Milvus migrans ægyptius (Gmelin).

♂. Halfa, Feb. 1921.

This was probably breeding or about to do so, as a note on the label says "Testes enlarged."

Streptopelia senegalensis sudanensis Sclater & Praed.

A pair from Halfa, Feb. 1921.

Senegal Doves from Halfa, Berber, and Dongola are distinctly paler than birds from Rejaf. Examples from the Blue Nile are intermediate. With the small amount of material at my disposal I have provisionally followed Sclater and Praed in calling the Halfa birds *sudanensis*.

Streptopelia turtur isabellina (Bonaparte).

A male and five living examples from Halfa, Feb. 1921.

I have one other Sudan specimen from Blue Nile Province obtained 1. xi. 10, where it is not uncommon in winter.

One of the living birds is a young bird in first plumage.

I cannot separate Sudanese specimens from Egyptian breeding birds.

Streptopelia decipiens decipiens Finsch & Hartl.

1 ♀. Kabashia, Berber, Dec. 1920.

This example is paler on the back than examples in the Giza Museum from the Blue and White Niles.

Œna capensis (Linnæus).

♂. Um Ruaba, Kordofan, Dec. 1920.

This single example is strikingly greyer on the upper parts than are four males in the Giza Museum from Khartoum and the White Nile.

Coturnix coturnix coturnix (Linnæus).

♂. Halfa, Feb. 1921.

Pterocles senegallus (Linnæus).

♂. Khartoum, Jan. 1921.

Pterocles senegalensis senegalensis (Lichtenstein).

Pterocles exustus auctorum.

2 ♂, 3 ♀. Kabashia, Berber, Dec. 1920. 1 ♀. Khartoum, Jan. 1921.

Sarkidiornis melanotus africanus Eyton.

2 ♂. Singa, Jan. 1921.

Dendrocygna fulva (Gmelin).

♂ juv. Um Ruaba, Kordofan, Dec. 1920.

Fuligula fuligula (Linnæus).

♂ ♀. Singa, Jan. 1921.

The male has the underparts and parts of the tail stained a deep rusty chestnut. I have never seen a duck stained to such an extent. The new feathers which are appearing in the tail and on the abdomen are normally coloured.

Fuligula brunnea (Eyton).

A live bird from Um Ruaba, Kordofan, obtained Dec. 1920.

This example, Flower tells me, was quite a young bird; he saw it in the yard of an Arab's house with young specimens of *Dendrocygna*. The owner, who did not distinguish this bird as different from his other young ducks, stated that he had obtained them all from the Um Ruaba "fûlah," where many waterfowl breed.

This seems to be a very great northern extension of the range of this duck.

I use Eyton's name for this species as, owing to lack of literature, I do not know if Neuwied's name *erythrophthalma* is applicable as stated by Sharpe, 'Hand-list of Birds,' vol. i. p. 223.

Himantopus himantopus (Linnæus).

3 ♀. Um Ruaba, Kordofan, Dec. 1920.

Charadrius alexandrinus alexandrinus (Linnæus).

♀. Sennar, Jan. 1921.

This example has a wing of 111 mm., and is undoubtedly of the typical form. Specimens from Egypt vary in wing measurement: out of a large series, eight in the Giza Museum are from 100 to 104 mm., but one of these was breeding with long-winged birds.

Charadrius dubius curonicus Gmelin.

2 ♂, 1 ♀. Singa; 2 ♂. Sennar. Jan. 1921.

Two of these are getting the black collar and frontal band of summer plumage. It seems to be little understood that

in winter, in Egypt at any rate, adults of this species, *C. hiaticula tundræ*, and *C. alexandrinus* have the collar and frontal band replaced by brown.

True adults of the last-named assume, after the autumn moult, a bright chestnut crown to the head.

Erolia minuta minuta (Leisler).

♂. Um Ruaba, Kordofan, Dec. 1920. ♂. Sennar, Jan. 1921.

Chettusia leucura (Lichtenstein).

♀. Um Ruaba, Kordofan, Dec. 1920.

Pluvianus ægyptius (Linnæus).

1 ♂. Sennar, Jan. 1921. 2 ♀. Singa, Jan. 1921.

Sarciophorus tectus Boddaert.

♂. Um Ruaba, Kordofan, Dec. 1920.

Hoplopterus spinosus (Linnæus).

4 ♂, 3 ♀. Kordofan, Berber, and Blue Nile, Dec. 1920 and Jan. 1921.

Sudan examples are darker on the upper parts, and have consistently shorter wings than our Egyptian examples in the Giza Museum.

Œdicnemus senegalensis Swainson.

1 ♂, 2 ♀. Singa, Jan. 1921.

Birds from the Blue and White Niles in our collection at Giza are slightly smaller in the wing than Egyptian birds. I could not, however, separate the latter on comparing them with a large series at Tring.

Machetes pugnax (Linnæus).

2 ♂. Singa, Jan. 1921.

Tringa hypoleuca Linnæus.

Seven. Singa and Sennar, Jan. 1921.

Tringa glareola Linnæus.

♀. Sennar, Jan. 1921.

Tringa ochrophus Linnæus.

♀. Sennar, Jan. 1921.

Tringa stagnatilis (Bechstein).
♂. Singa, Jan. 1921.

Tringa nebularia (Gunner).
♀. Sennar, Jan. 1921.

Porzana parva (Scopoli).
One, probably a female. Singa, Jan. 1921.

Phalacrocorax africanus (Gmelin).
2 ♀. Singa and Sennar, 1921.

Colymbus ruficollis capensis (Salvadori).
A young male in first plumage. Um Ruaba, Kordofan, Dec. 1920.

Sylvia rüppelli Temminck.

Sclater and Praed, page 661, are I think in error in supposing the females they describe to be young birds. A large series which we have from Egypt shows that the female of this Warbler never has a black crown. Some, which I take to be really adult, not to say old birds, have a dark grey throat. The usual female plumage much resembles that of a Lesser Whitethroat but is a little darker. Sometimes a little blackish is apparent on the crown.

Hypolais pallida pallida (Hemp. & Ehrenb.).

The typical form seems to be restricted to Egypt and the Sudan, "Nubia" included. Sclater and Praed's statement that it breeds in S.E. Europe and W. Asia is not correct, as the form from those countries is *H. p. elaica*. I have one specimen of the latter from Giza, Egypt, in April, and it is possible that it may be found to visit the Sudan in winter.

Locustella luscinioides luscinioides (Savi).

I do not know on what authority Shelley based his statement that this bird was a resident in Egypt. I have no proof that it is more than a spring and autumn migrant.

Lanius senator senator = **Phoneus s. senator** S. & P.

This, the typical form, is not uncommon, on migration, in Egypt, as is also the eastern *L. s. niloticus*.

Lanius minor Gmelin.

We have three or more specimens in the Giza Museum from Khartoum, all in immature plumage and obtained in August and September by Flower and the late Capt. Halhed.

I do not think that August is early for this bird to appear in the Sudan, as it passes through Egypt in large numbers in that month.

Muscicapa atricapilla semitorquata Homeyer.

Muscicapa albicollis Temm.

Sclater and Praed seem to have overlooked the characters by which these two species may be differentiated, at a glance. I have set these forth, at length, in my 'Handlist.'

M. albicollis never has any white on the inner web of the rectrices. *M. a. semitorquata* has white on the first, second, and often the third pair. *M. albicollis* sometimes has white on the outer web of the first and second pair, sometimes no white in the tail at all.

Both of these species are common visitors, on migration, to Egypt in spring.

Hirundo daurica rufula Temminck.

This is a very common migrant through Egypt in spring, and I have obtained it in autumn. Great numbers pass through the Wadi Natrun in April, and there is no reason to suppose that these come from anywhere else but up from the sources of the Nile.

Cuculus canorus Linnæus.

Cuckoos pass through Egypt in July, so it is not unreasonable to suppose that that month is not so early for them to appear in the Sudan. May I be permitted to quote from the old adage: "In July they begin to fly." I might remark that the earliest arrivals, here in Egypt in July, are always adults.

Upupa epops.

Page 666. The Egyptian race is not *U. e. major* Nicoll, but *U. e. major* Brehm. I only rediscovered this interesting form which, of late years, owing to the protection given to it, has increased enormously.

Falco concolor Temminck.

The range of this Falcon is not yet clearly understood. There is no doubt that it breeds in Egypt, and the examples met with elsewhere are on migration. It is certain that it is a Palæarctic form as regards its breeding range, if we include Egypt in the Palæarctic region. Its occurrence in Madagascar in winter, as has, I believe, been recorded, shows that it migrates south, so that it is probable that it may be found in the Sudan. At any rate it seems to be a very rare bird, and the appearance of a pair flying round the Giza Zoological Gardens throughout June every year is well worth seeing. I have also seen this pair accompanied by their young.

Circaëtus gallicus (Gmelin).

I must disagree with Sclater and Praed in their statement regarding the breeding range of this Eagle. As I have stated in my 'Handlist' the Short-toed Eagle is a resident in Egypt.

Turdus torquatus alpestris (Brehm).

Unfortunately, Flower only saw and did not obtain the Ring-Ouzel at Dongola, p. 678. It is interesting to hear that this form has occurred in the Sudan, as the only example I have seen from Egypt was *T. t. orientalis*. This I shot at Giza in 1906.

Monticola solitarius solitarius (Linnæus).

It is most remarkable that all the specimens from the Sudan should be of this form, for a large series from Egypt in our Museum are all referable to the well-marked race *M. s. transcaspicus* Hartert.

Gallinula angulata Sundevall.

The specimen mentioned, page 825, is in our Museum at Giza.

Columba livia schimperi Bonaparte.

I consider that it is quite impossible to assign any name to the Pigeon of the Nile Valley between Cairo and Aswan. Pigeons have been kept in a semi-domesticated state for so long in Egypt that it is now almost impossible to shoot two similar birds from the same flock. Although many apparently pure coloured "*schimperi*" may be obtained, I have several similar examples but with pure white "buffer" bands on the back. One may also get feather-footed birds, white, black, pied and red, and chequers, from the same flock. These facts surely speak for themselves.

Coturnix coturnix coturnix (Linnæus).

In my 'Handlist' I wrongly, as I now consider, included *C. c. capensis* among the birds of Egypt on the strength of red-throated specimens. Last year (1920) I purchased a great many living Quail, all the males of which were carefully examined, and all were found to be quite typical *C. c. coturnix* as regards the coloration of the throat. I now find (July 1921) that many of these males have assumed deep brick-red throats. It, therefore, seems probable that the Quail, in this country, assumes a red throat in summer.

Ammoperdix heyi cholmleyi O.-Grant.

I have examined the specimen obtained by Mr. F. S. Worthington at Aswan (p. 847), and entirely agree with the authors as to its being *cholmleyi*. (Since I published my 'Handlist' I have received a fine pair of adult *A. h. nicolli*, shot by T. W. Russell Pasha, two days' march south of Assuit. This is the farthest south I have yet received evidence of its occurrence.) In the next edition of my list I shall therefore include *A. h. cholmleyi*. We have yet to learn where the two forms meet.

XXXVIII.—*Notes on the Mound-building Birds of Australia, with Particulars of Features peculiar to the Mallee-Fowl,* Leipoa ocellata *Gould, and a Suggestion as to their Origin.* By Edwin Ashby, M.B.O.U.

We are familiar with the views advanced by several writers that the habit of artificially incubating their eggs, common to the Mound-building Birds of Australia, is a survival from their reptilian ancestors. The following notes suggest an alternative explanation, which the data advanced seem sufficiently to support.

Megapodius reinwardti Dumont.

The huge mounds made by the Jungle-Fowl, *Megapodius reinwardti*, are well known. In 1906 Mr. C. E. May, who was working on the Government Bore, then testing the shale for coal, at Port Keats, in the Northern Territory, at my request very kindly took the following measurements and supplied me with the notes hereunder :—

Nesting-mound.	Diameter at base.	Circumference.	Height of Mound.	Diameter at top.
	ft.	ft.	ft. ins.	ft.
No. I.	53	167	8 6	17
No. II. ...	46	147	7 6	12
No. III. ...	33	105	5 9	12
No. IV. ...	42	132	7 6	12

All the nests were flattened at the top and were more or less covered with brush-wood, which Mr. May thought had been placed there by the birds with the probable purpose of retarding evaporation and thereby keeping the surface-soil of the mound from baking hard. He also suggested that the flattening of the top was due to the frequent digging out of the eggs by the aboriginals.

The mounds are placed in thick jungle, and usually large Tamarind-trees are growing out of them. The Megapode feeds largely on the fruit of the Tamarind, which probably accounts for the consistency with which these trees occur in the mounds, the seeds being excreted by the birds. The same

mound is used season after season, the birds scratching out tunnels from two to five feet deep, penetrating the mounds at an angle of 45 degrees. The eggs of one laying bird are five or six in number, each being placed in a separate tunnel, two to three feet from its neighbour.

The tunnel in nest No. II. had been filled in with green leaves, and a trail sixty feet long led up to the place where the newly laid eggs had been placed.

When nest No. I. was opened, the young man who had worked his way, several feet head-first, into the filled-in tunnel began to make frantic efforts to get out quickly, calling in muffled tones for help. His companions hauled him out by his heels, when out flew a fully fledged chick, which was secured and the skin sent down to the writer. This skin is now, I believe, in the British Museum. It seems that the newly hatched chick was commencing to work itself out, and finding the intruding hand, pecked it vigorously. The young man thought he had been bitten by a snake and naturally was a good deal frightened.

In the case of the *Megapodius* mounds, the fermentation of the leaves and debris filled into the tunnel-like openings produces sufficient heat under the moist tropical conditions to fully incubate the eggs. As the young have to fend for themselves directly they are hatched, Nature provides that they shall be able to run and fly immediately on leaving the egg.

Alectura lathami Lath. Scrub- or Brush-Turkey.

I have met with this bird in the Blackall Range in southern Queensland and in the semi-tropical brush or forest of northern New South Wales. The country in which these birds occur is moist and tropical. In the first-named locality, we in October 1903 located a recently made nesting-mound of the above species. It was placed at the base of a large Moreton Bay Fig-tree. The leafage overhead was very thick, and the debris and dead leaves underneath had been proportionately thick, but for a radius of fifty feet from the mound the ground had been raked bare,

every loose twig and leaf seemed to have been gathered together and formed into a mound of fermenting material equal to several dray-loads. I have watched the male bird doing this work, taking several, shall I say, handfuls of debris and throwing it backwards until by successive efforts it has reached the spot chosen for the mound.

In the moist warm conditions of that forest, fermentation quickly commences and accumulated material rapidly generates heat.

We went through the mound in question and found that it was too fresh for the deposition of eggs; the temperature must have been very high—indeed, so hot that the eggs, if placed in it, would have been almost, if not quite, cooked. One cannot help asking how and by what means do the birds know when the temperature is right for their purpose.

The Scrub-Turkey evidently has some knowledge of the conditions that are necessary for satisfactory incubation, and refrains from placing its eggs in the nesting-mound until this is reached. This suggests a rather high order of intelligence.

Leipoa ocellata Gould. The Mallee-Fowl.

This fine bird inhabits almost exclusively the vast tracts of the drier parts of Australia which are covered with the various species of the dwarf branching forms of Eucalypti known as Mallee.

All opportunities that I have personally had of examining the nesting-mounds of this bird have been in the extensive belt of Mallee lying on both sides of the valley of the River Murray in South Australia.

The birds usually select a sandy rise and commence the nesting-mound by excavating a hole—in the case of the one I examined in this stage, situated about fifteen miles from the town of Mannum, the excavation was about eighteen inches deep and six feet or more across. For some reason the birds had forsaken this spot at this stage and made the nesting-mound on another sandy rise some distance away.

In reference to the digging of the hole for the foundation

of the future mound, Mr. G. H. Mann writes me, 10 March, 1922, that "From my observations it seems that they scratch out a hole early in the winter and then fill it up with a cone-shaped heap of dry leaves and sticks: these they cover with sand about the end of the winter."

These sticks and leaves ultimately become largely intermixed with the sand, but the leaves and twigs are mostly below the eggs. Most of the mounds in the belt of Mallee before referred to, were when finished nine feet to twelve feet across, with a depression in the middle, and raised about two feet above the normal level of the ground. Mr. J. E. Lewis Machell, of the Education Department in Adelaide, furnished me with some very valuable observations in a letter dated 4 March, 1922; I give them in full. "I am forwarding the answers to your queries *re* Mallee-Fowl. These are simply notes and observations made by me during 1914, together with a photograph taken at Murray Bridge in January last. Nest, fifteen feet in diameter and about two feet six inches high, situated in an open space in a scrub of so-called 'broom' with occasional Mallee: soil sandy. Composition of nesting-mound, central portion decaying leaves and vegetation covered with sand. There is a depression in the centre, and eggs are laid around the rim of this hollow. Before making the nest a small hollow is scraped out: the one I mentioned was only about five inches deep and two feet six inches wide, and was filled with leaves and twigs. The eggs did not appear to be laid down as far as the leaves. Many were standing on end, but not all. I may have disturbed them when opening up the nest. The sand was fairly dry where the eggs were, but not as dry as in other parts of the nest. Foxes robbed the nests as fast as the eggs were laid (note fox-tracks on mound in photograph). In 1914 I had the pleasure of watching the birds at work, but it meant lying hidden from 6 o'clock in the morning until 10 o'clock. I could hear the birds moving around, but they did not appear. About 10 A.M. (when the sun was shining directly on the nest), the male and female appeared on the mound. The female stayed, but the male disappeared

into the scrub again to do sentry-go. Well, Mrs. Mallee-Fowl began to open out the egg-chamber; every few minutes she would pause and appeared to settle her neck and breast against the sides of the egg-chamber. The sand was cleared away until there was about an inch left covering the eggs, then the male joined her and both disappeared. On visiting the nest at 4 P.M. (the shadows were just on the nest), I found that the sand had been replaced."

"I repeated this observation the following day and again a week later, and the sand was always replaced before the shadows fell on the nest."

Mr. T. P. Bellchambers of South Australia wrote me on 7 March, 1922, as follows:—"All covering material is mixed with desiccated leaves. For sunning purposes, *i. e.* 'solar heat,' the nest is opened almost to the level of the eggs—this may be done as often as five days out of seven. The refilling is a gradual process and takes all day, as it is replaced in layers as soon as it gets hot. The male does all the hard graft, grasps and throws all the material behind him."

It will be seen that, while on the important point, the utilization of solar heat, all the three observers quoted above are in agreement, Mr. Mann adds "I do know that they (the Mallee-Fowl) open out the nests mostly in the morning, but have the impression that they are not long left open"—the depth of the initial excavation varies somewhat.

In the example that came under my personal observation, the excavation was considerably deeper than was the case with the nest examined by Mr. Machell; we may therefore conclude that this varies with the depth of the sand and the nature of the soil. Again, while Mr. Bellchambers only quotes the male as doing the filling work, Mr. Machell records the work as done by the female. Some differences may be due to the fact that Mr. Bellchambers's birds are in semi-captivity.

I think we may conclude that, while this work may probably be largely undertaken by the male, both sexes share therein. Mr. Machell's observation of the bird pressing

her neck and breast against the egg-chamber is quite unique, and suggests the possibility that this action is part of the method by which the birds ascertain the temperature of the enveloping sand.

My opportunities of personally observing these interesting and shy birds in their native haunts have been too brief and too far apart to furnish conclusive data, but, from my own observations and from the information supplied to me from time to time by dwellers in the back blocks, I have long felt satisfied that it is the regular habit of the Mallee-Fowl to open out the nesting-mounds almost down to the eggs on clear, hot, sunshiny days—this opening being done as soon as the sun is well up. The sand is rather widely distributed and heated by the sun's rays to a high degree. The birds always return fairly early in the afternoon, which accounts for Mr. Mann's observation "that he is under the impression that they are not long left open"—he seldom passes the nesting-mounds on his way home from work till late in the evening, —the object of the birds' return being to restore the heated sand to the nest. The accumulated heated sand retains its high temperature, or a large amount thereof, for some days. It seems evident that the mounds are not opened by the birds (except for actual egg-laying) on cool cloudy or drizzly days, the birds awaiting the return of a clear sky and the heating power of an unimpeded sunshine. In the districts where Mallee grows this is the normal weather.

In my lectures on Australian Bird-life before Agricultural and Horticultural Societies and other Public Bodies in the State of South Australia, I have often during the last few years told the story of the *Leipoa*, and expatiated upon the wonderful adaptation of its methods to changed climatic conditions, suggesting the following hypothesis by way of explanation.

As is well known, the interior of Australia used to be favoured with a much heavier rainfall than is now the case. The discovery of numerous skeletons of the huge extinct *Diprotodon* half-buried in the dry bed of what was once a

lake at Calabona in South Australia and the survival in a shady gorge of the MacDonald Ranges of a species of Fan Palm and a *Macrozamia*, both representatives and survivals of a long-distant past when luxuriant vegetation grew there, conclusively support this contention.

A botanist of high standing has advanced the opinion that the "Mallee," a group of Eucalypts that branch from the base and no longer grow into a timber-tree, are the survivors of an ancient forest. Therefore the thousands of square miles of Mallee now existing are the remains of an immense aberrant forest, dwarfed and stunted during the ages because of the steady decrease in the rainfall.

It is quite certain that the spare, stiff, cardboard-like leaves of these Eucalypts and the very dry character of the districts in which they grow, absolutely preclude the possibility of the generation of sufficient heat by fermentation to hatch such eggs that may be deposited there. I therefore judge that in the long-distant past the *Leipoa*, in common with its congeners, *Megapodius* and *Alectura*, gathered together the leafage and debris that must then have thickly strewn the ground under the trees of the luxuriant forests of those distant days.

But slowly and surely the climate changed, the atmosphere grew drier and drier, the forest-trees diminished in size, until we have the dwarf forms of Eucalypts which we know to-day as Mallee.

If we accept this statement of probable facts as correct—the evidence is so strong that it is well-nigh impossible to deduce otherwise,—we may fill in an unwritten page of the past history of Australia's Mound-building Birds.

Instead of their method of incubating their eggs being a survival of an old reptilian habit of simply scratching a hole in the sand and leaving the future of their eggs to the influence of solar heat and chance, we have a group of birds who have acquired highly specialised habits in connection with the incubation of their eggs.

It is impossible to tell whether their progenitors had, in common with most birds, been "nest-makers," hatching their eggs by means of body-heat, and then adopted the method of

hatching them by means of heat produced by the fermentation of organic matter, or whether it was a parallel development. This we can be certain of, viz., that the collecting together of dead leaves into heaps in order that fermentation may be induced, then the awaiting of the time when the necessary heat was generated and the ascertaining of the correct time when the ferment was on the wane and it became safe for the deposition of the eggs, shows an intelligence of a very high order.

The case of the *Leipoa* is still more remarkable. That the rainfall has greatly decreased in the interior of Australia has been sufficiently demonstrated. By reasonable deduction we are safe in asserting that the vegetation of this area will in the past have more or less corresponded with that which now obtains in the habitats of the Jungle-Fowl and the Brush-Turkey.

We are certainly justified in concluding that the Mallee-Fowl, in common with the above-named genera, originally depended entirely for the incubation of its eggs on heat generated by fermenting organic matter. With the reduction of the rainfall a great change took place in the vegetation, ultimately fewer and fewer eggs laid by the Mallee-Fowl were successfully hatched, and the birds were confronted with extermination. There could have been only two alternatives, either a reversion to the methods common to other birds, viz., that of incubation by means of body-heat or the discovery of some new means whereby the temperature of the mounds could be raised. This difficulty has been met and overcome by these intelligent birds in the utilization of solar heat. It will be remembered that conjointly with the reduction of the rainfall came an increase in the periods of clear sky and bright sunshine.

I submit that there is sufficient ascertained data to warrant us in piecing together this page in the past history of the *Leipoa*. It certainly forms one of the most intelligent and remarkable cases of the adaptation of habits to changed circumstances that can be found in the whole realm of Nature below that of man.

XXXIX.—*Hybrids of* Gennæus *from Natural and Artificial Crosses showing similar Pattern and Intergrading.* By Mrs. Rose Haig Thomas, M.B.O.U.

In a paper entitled "A Revision of the Genus *Gennæus*" (Journal of the Bombay Natural History Society, xxiii. 1915, p. 658), Mr. Stuart Baker draws attention to a continuous natural hybridization taking place between *G. horsfieldi* of Assam, the "Black Kalij," and *G. nycthemerus*, the Silver Pheasant, inhabiting the neighbouring Northern Shan States, and to its geographical distribution over those countries and Burma, Tenasserim, and Siam. Convinced of the hybrid nature of many specimens the author reduces the number of subspecies to simpler figures; he points out the large number of birds shot within the triangle containing Assam, Northern Shan States, and Tenasserim, which, though given the rank of subspecies, are undoubtedly hybrids, and further states that round every area in which these subspecies (discontinuous hybrids) are found, a zone of unnamed intermediates exists, and that, where the differing forms of *Gennæus* "*horsfieldi*" and "*nycthemerus*" are close neighbours and "the physical geographical change abrupt," the hybrid intermediates are so numerous and so infinitely graded that none deserve sub-specific rank. The geneticist might consider these to be F. 1 in constant generation by continuous intercrossing and the few fixed discontinuous hybrids (subspecies) either F. 2 or F. 3 *inter se*, or cross-backs. At any rate, Mr. Stuart Baker's interesting investigations call attention to an extensive district where natural intercrossing between two widely differing species of a genus is occurring and evolving, either by loss of, or linkage of, or by re-combination of factors, new forms, some of them constant and heritable.

To whatever cause the author may attribute the variations of these new forms, he abandons the task of separating the numerous intergrades, and classifies only the fixed forms as subspecies. The interest of Mr. Stuart Baker's revision has been much increased by the issue of a paper in 'Genetics' (vol. vi. July 1921, pp. 366–383) by Mr. J. C.

Phillips, of Wenham, Mass., U.S.A., on some of his hybridizing experiments, a copy of which the author has kindly sent me. Among other crosses he describes one made between "*Gennæus melanotus*," which he names "the Black Kalij," and *Gennæus nycthemerus*, the Silver Pheasant, the latter used as male parent: the cross was made in 1915. Eight F. 2 males were reared and kept until the second year, when they assumed adult plumage; they were then killed for specimens; the backs only of five birds are shown in illustration, all males, *G. nycthemerus*, *G. melanotus*, one F. 1 and two F. 2, these latter showing the extremes of the variants towards *G. nycthemerus* and *G. melanotus*. F. 1 seems to be identical with *G. lineatus* (Shan States, Burma and Siam), with rank of a species; whilst F. 2, the nearest variant to *nycthemerus*, with a long tail, resembles very closely *G. rufipes* (Ruby mines, Burma), ranking as subspecies from the natural *horsfieldi-nycthemerus* intercrossing, the other F. 2 appears, and is stated in the text to be, very similar to *G. melanotus*, though some vermiculation is traceable on the feathers. Specimens of *G. lineatus*, *rufipes*, and *melanotus* are in the Natural History Museum at South Kensington. In the Catalogue of Birds, vol. xxii., where *G. melanotus* is placed under *G. muthura* (=*melanotus*), the breast-feathers of the male *muthura* are described as "dirty white and lanceolate," which is accurate for the Museum specimens. Evidently, like most of the Pheasant family, the species varies, for on one skin the blue-black of the upper parts is invaded by a narrow line of white on some of the wing-coverts. It is a matter for regret that Mr. Phillips did not illustrate the breasts of his males, for one is left a little doubtful as to the species used. *G. horsfieldi* is the true Black Kalij: the underparts are black, the only white occurring are narrow marginal lines across the rump and tail-coverts. Mr. Phillips's paper errs in that his statement is not full enough; a cross such as he made between *white upper parts*, *black underparts*, and *long tail*, *G. nycthemerus*, and *black upper parts*, *isabelline white underparts*, and *short tail*, *G. melanotus*, must have produced graded underparts fully as interesting as the segregation of the tail and upper parts.

The specimens of the females *horsfieldi* and *muthura* (= *melanotus*) in the Natural History Museum are alike in pattern and general coloration; the pale margins of the breast-feathers distinguish them from the breast of the female *nycthemerus*, which in the typical form has a distinct white pattern on a dark ground. We must remember *G. melanotus* was the female parent in Mr. Phillips's experiment.

A few weeks ago Mr. Phillips was in this country and examined the Museum specimens in the Bird Room of *G. horsfieldi* and *G. muthura* (= *melanotus*) to ascertain which species he had used, but neither seemed to recall his own specimen, and he returned to America in doubt; it has been suggested that to solve the doubt he might send over his skins to the Museum for examination.

Since writing the above I have received the following letter from Mr. Phillips, in which he acknowledges that he made a mistake in identification :—

"The bird which I used in my crosses was certainly the straight *melanotus*. I compared my old stock with specimens in the Museum of Comparative Zoology in Cambridge at the time and they checked up entirely. I looked at the Museum of Comparative Zoology specimens again to-day, and they are like the ones you showed me in London, black on whole upper side, but not black on breast. It was my mistake; it should have read 'whole upper surface black.' I am glad you called my attention to it."

"Sincerely yours,

"June 19, 1922. "John C. Phillips."

XL.—*A Note on Acquired or Somatic Variations.*

By Percy R. Lowe.

Mr. Witherby in 'The Ibis' for April 1922, p. 331 *et seq.*, expressed himself as unconvinced of the soundness of my contention (Ibis, 1922, p. 185) to the effect that the distinctive darker coloration of the Bermudan Goldfinch would not be inherited but would be re-acquired in each generation.

I would crave the indulgence of readers of 'The Ibis' while I make an additional defence of my statement; for, tired as they may be of the Bermuda Goldfinch, the principle at stake is one, the importance of which can hardly be exaggerated if we are to take any interest in the philosophical side of Ornithology, and, more particularly, in the subject of Variations and the part they play in Evolution. The problem, simply stated, resolves itself into this—is this character (the darker coloration which distinguishes Bermudan from European Goldfinches) hereditarily inborn or is it due to some somatic modification either "ante-natal" or "post-natal"?

If the character is inherited, then it is inherited through some controlling factor or gene which is represented in the chromosomes of the nuclei present in the germ-cells of the parent birds. I have already stated that I cannot believe this to be the case.

On the other hand, the following explanation appears to me to be the more likely solution of the problem; at the same time it might possibly solve Mr. Witherby's difficulty in connection with the distinctive character appearing in the first brood hatched on the island, or that which some ornithologists feel in accounting for the fact that the chicks of other similar variations in other species are hatched with the variation already evident before external environmental influences have had time to operate.

The fertilized ovum then, according to my contention, contains no factor for a "darker coloration," but as it passes along the oviduct it receives an enveloping layer or mantle of albumen derived from maternal sources. It is obvious that this maternal nurture, taken in conjunction with the maternal blood-supply present in the follicular stroma of the ovary, must play an important part in the development and vigour of the ovum. The ovum is, in fact, both before and after fertilization, surrounded by a somatic maternal environment. If the vigour or the physio-chemical tone of the parents has been intensified by a congenial external environment such as the Bermudas, all the

developmental processes taking place in the ovum will evidently be correspondingly intensified. Among those processes will be that of pigmentation, so that there need not be much difficulty in accounting for the fact that the chick's nestling, fledgling, or juvenile plumage will be richer in coloration than that of a corresponding European chick, if, indeed, such is actually the case—the point to be noted, and this is obviously the crucial point, being that the darker pigmentation is acquired and due to somatic influences and has, if my contention is correct, no connection whatever with germinal factors.

It is therefore evident that if we take this view of the case, the darker pigmentation of the Bermudan Goldfinch is not inherited in the proper sense of the term, but is acquired afresh after the fertilization of each ovum, so that if we were to place the parent-birds in a less vigorous or less congenial environment or in one less prone to produce intensification of pigmentation, the coloration process would return to its normal and original base-level.

We may perhaps venture another step and deduce from the above premisses that intensified pigmentary processes of this kind play no part in the evolution of the species. They would appear to be merely temporary expressions in space on the part of any given species at any given secular period; and, as compared with more deep-seated blastogenic mutations or variations, either in the orthogenetic or fortuitous progress of the species in Time, would appear to be superficial, transitory, and as it would seem from the point of view of the genesis of new species, negligible.

As Prof. Arthur Thomson* has written, "From an unbiassed registration of all observed differences between the members of the same species there have to be subtracted all peculiarities that can be reasonably interpreted as associated with age and sex, or as individually-acquired somatic

* "The System of Animate Nature" or the Gifford Lectures delivered in the University of St. Andrews in the years 1915 and 1916, p. 433.

modifications directly due to peculiarities of nurture, whether environmental, nutritional, or functional. As there is no convincing evidence at present that these extrinsic somatic modifications can be transmitted as such, or in any representative degree, they cannot be included, in the first instance at least, among the raw materials of racial evolution. These are discerned when the modifications in question are subtracted from the total of observed differences. For this subtraction brings into view the true variations or mutations—inborn not acquired, blastogenic not somatogenic, endogenous not exogenous, expressions or outcomes not indents or imprints."

XLI.—*Obituary.*

William Henry Hudson.

We regret to learn of the sudden death of Mr. W. H. Hudson, which took place very suddenly in his sleep, on 18 August last, at his London residence, in his eighty-first year.

Mr. Hudson's father was one of the early emigrants to the pampas of La Plata and his son was born there, where the influence of limitless plains and of its teeming bird-life impressed itself on the whole of his subsequent writing. When still a young man he entered into a correspondence with Dr. P. L. Sclater, and transmitted to him several collections of South American birds and mammals, accounts of which were published in the 'Proceedings of the Zoological Society' between 1870 and 1872, and formed the basis of a joint work published in 1888-9, under the title of 'Argentine Ornithology,' to which Mr. Hudson contributed the notes and descriptions of the birds' habits, while Dr. Sclater supplied the technical descriptions. A second edition of this work was published by Mr. Hudson alone in 1920, in which all the technical matter was omitted.

Mr. Hudson's two other works on the natural history of South America, 'The Naturalist in La Plata,' 1892, and 'Idle Days in Patagonia,' 1893, are familiar alike to naturalist and all lovers of good literature. In the meantime Mr. Hudson settled in England and commenced a long series of volumes dealing with the study of nature chiefly of the southern counties: 'Birds in a Village,' 'Nature in Downland,' 'The Land's End,' 'British Birds,' and 'Birds in London' followed one another in rapid succession. Perhaps the most charming of all his works is the autobiographical 'Far Away and Long Ago,' in which he tells us of his boyhood on the pampas, and draws a delightful picture of the patriarchal life of a Spanish American estancia and the wild life of the gauchos, the half-bred horsemen of the plains.

The charm of Mr. Hudson's writing lies in its directness and simplicity. He drew no deductions, nor did he import into his descriptions of what he saw, anthropomorphic explanations or suggestions as is so frequently done by descriptive writers on natural history. Though always in delicate health he was able to tramp for long days across the downs and woodlands of the southern counties from the New Forest to Penzance. His nature was exceedingly sensitive, and he shrank from causing the death of a single living creature. In consequence of this he severed his connection with the B. O. U., of which he was a member from 1893 to 1908.

It was only after many years of struggle that popular recognition of his wonderful gift of English prose came to him, and in 1901 his health and slender means made him grateful for a small Civil Service Pension. Later on, in his own phrase to a friend, publishers "threw money at him with both hands," and he resigned his pension last year.

Though he could never be reckoned among the ranks of the scientific ornithologists, his work as an interpreter of nature and as a master of the finest type of English prose will endure for many a long year.

Heatley Noble.

Heatley Noble, who died at his house, Temple Combe, near Henley-on-Thames, on 22 March last, was a well-known sportsman and oologist. He was elected a member of the Union in 1895, and resigned in 1910.

Noble was born in London 4 June, 1862, and was the third son of the late John Noble, of Park Place, Remenham, Berkshire. He was a salmon-fisher, a deer-stalker, and one of the best shots at Grouse or driven Pheasants in the United Kingdom. He accumulated an immense collection of Palæarctic eggs, which he sold many years ago, and then commenced another one of his own taking. For this purpose he travelled extensively to Iceland, Scandinavia, Spain, and Uruguay. He prepared a List of European Birds, which was published in 1898, and compiled the ornithological section of the Victoria County History of Berkshire. He also sent various short notices to the Bulletin of the B. O. C., the 'Zoologist,' and 'British Birds.'

William Palmer.

The death of William Palmer, which occurred on 22 April last year, deprived the American Ornithologists' Union of a Fellow of long standing, and the United States of an excellent and talented ornithologist and taxidermist.

Palmer was born at Penge in south London in 1856. His father, Joseph Palmer, was a skilful taxidermist and modeller in plaster, and was engaged for many years with the late Prof. B. Waterhouse Hawkins in making the gigantic models of extinct saurian and other monsters which adorned the gardens of the Crystal Palace in former days. Prof. Hawkins received a commission to execute a similar set of casts for Central Park in New York, and in 1868 he went to America accompanied by Joseph Palmer and his son. Both father and son subsequently entered the service of the United States National Museum at Washington. Young Palmer soon became the chief taxidermist of the Museum, and was one of the pioneers of the great development of that

art which attained such a degree of perfection in the United States at the end of the last century.

Palmer, however, was by no means only a taxidermist, he made many collecting expeditions to Alaska, Cuba, Mexico, as well as to Java, where he was for nearly two years working with Mr. Owen Bryant, who financed the expedition.

Notwithstanding his official duties Palmer wrote a good many papers, not only on ornithological subjects but also on botanical and other themes; a list of these, some sixty in number, are given in the memorial notice written by Mr. Richmond (Auk, 1922, pp. 305–321), and to which we are indebted for the facts in this notice. Palmer joined the A. O. U. in 1888 and became a Fellow in 1898, and was a great favourite among his fellow-workers at Washington.

Theophil Studer.

Dr. Th. Studer, who died at Berne on 12 February last in his 76th year, was Professor of Zoology in the University of that place, and was well known for his work on the development of feathers, on which subject he wrote several papers. He was also the author, with Dr. Fatio, of that excellent 'Catalogue of the Birds of Switzerland,' which was first published in 1889, and has passed through several editions. It is undoubtedly the leading text-book on the subject of the Birds of Central Europe.

XLII.—*Notices of recent Ornithological Publications.*

Baker on the Birds of British India.

[The Fauna of British India, including Ceylon and Burma. Published under the authority of the Secretary of State for India in Council. Edited by Sir Arthur Shipley, O.B.E., etc. Birds. Vol. i. (Second Edition). By E. C. Stuart Baker, O.B.E., etc. Pp. 1–479. 8 col. pls., many text-figures. London (Taylor & Francis), July 1922. 8vo.]

The first volume of the Birds in the first edition of the well-known 'Fauna of British India,' prepared by Mr. Oates under

the editorship of Dr. Blanford, was published in 1889, and the fourth and last by Dr. Blanford himself in 1898. Nearly twenty-five years, therefore, have elapsed since that excellent work appeared—a model of what a regional avifauna should consist of. Sir Arthur Shipley, the present Editor of the 'Fauna,' was well advised to entrust the preparation of the much needed new edition to Mr. Stuart Baker, who has so frequently during the last ten years shown his capacity for such a task.

The chief change which will be noticed in the new edition is the adoption of the trinomial system, which has added largely to the number of birds to be described, that is, to the total number of subspecies, though it has reduced the number of species, for many of those forms formerly reckoned as such, have been relegated to subspecific rank. The other points in which a change will be noted is the correction of many nomenclatural errors, rendered necessary if the rules of nomenclature are strictly adhered to, and the absence of the synonymy and references which took up so much space in the first edition. This and the use of briefer descriptions has enabled Mr. Baker to give additional room to field-notes, and to describe briefly the nests and eggs of most of the forms.

In the matter of classification Mr. Baker has relied mainly on Dr. Gadow's work as set forth in Bronn's 'Tierreichs.' He has also availed himself of the advice of Mr. W. P. Pycraft. On the other hand he has, anyhow in the present volume, kept the families arranged in the same order in which they were placed in the first edition, though he has raised to family rank the Paridæ, Paradoxornithidæ, and Pycnonotidæ, included by Oates in the Corvidæ and Crateropodidæ respectively.

The present volume contains descriptions of 373 forms including species and subspecies, and carries us through the Crows, Tits, Hill-Tits, Nuthatches, Timaliine birds, Bulbuls, Creepers, and Wrens. It contains about half the families dealt with in the first volume of the old edition, so we may expect the present one to extend to about eight volumes

instead of four, and as Mr. Baker hopes to be able to issue a volume every two years, it will be some time before the whole work is complete. Some new subspecies are described in this volume for the first time, as follows:—*Dendrocitta rufa sclateri* Chin hills, *D. r. kinneari* Burma, *Ægithina tiphia humei* Central India, *Otocompsa emeria peguensis* Burma, and *Certhia discolor fuliginosa* Shan States. The curious *Hypocolius ampelinus* retains its place among the Timaliine birds, and the genus *Podoces* is added to the Indian fauna on the strength of a single example of *P. humilis* taken in the Chumbi valley. The familiar though excellent text-figures, chiefly of the heads of an example of each genus, have been retained throughout, and the work is further embellished with a series of eight coloured plates reproduced by Messrs. Bale & Danielsson from the accurate and living pictures of Mr. Baker himself.

We shall look forward to seeing the succeeding volumes, and in the meantime commend Mr. Baker's new venture to all Indian ornithologists as a worthy successor of the old "Oates and Blanford."

Baldwin on Bird-banding.

[Adventures in Bird-banding in 1921. By S. Prentiss Baldwin. Auk, xxxix. 1922, pp. 210–224, 2 pls.]

[Bird-banding Notes, no. 1, April 1922, pp. 1–9 (mimeographed), issued by the U. S. Dept. Agr., Washington, D.C.]

The first of these papers is mainly educative and includes some account of the work of bird-ringing, or bird-banding as it is more usually termed in America, undertaken by the author at Thomasville, Georgia, in the spring of 1921. A good many individual birds—Blue Jays and Cardinals—have been trapped for several successive years, showing how strictly resident these species are, while among the migrants the White-throated Sparrow (*Zonotrichia albicollis*) returns year after year to the same spot. One individual has been trapped by Mr. Baldwin in 1916, 1917, 1921, and generally on several occasions in each year during February and

March, while on its way New England or Canada to breed.

The second publication is a set of instructions for workers who propose to take up bird-banding, issued by the Bureau of the Biological Survey. Hints in regard to traps, methods of banding, baits, methods of handling birds when caught, and directions for filling up cards and schedules are given at length. The Bureau of the Biological Survey at Washington has now undertaken the work of classifying and recording all the information sent in to them and to draw up reports on the work as time goes on.

Bangs and Penard's recent papers.

[A new form of *Edolius forficatus* (Linn.). By Outram Bangs and Thomas Edward Penard. Proc. New England Zoöl. Club, viii. 1922, pp. 25, 26.]

[A new Humming-bird from Surinam. By T. E. Penard. *Ibid.* pp. 27–28.]

[The northern form of *Leptoptila fulviventris* Lawrence. By O. Bangs and T. E. Penard. *Ibid.* pp. 29–30.]

The first note contains a description of *Edolius forficatus potior,* subsp. n., from Anjouan (Johanna) Island of the Comoro group. It is heavier and larger than the typical race from Madagascar. In the second note Mr. Penard describes *Heteroglaucis philippinæ,* a new Humming-bird collected by himself during a recent visit to Surinam. In the third note Messrs. Bangs and Penard propose a new name for the northern race of Sennett's Dove, *Leptoptila fulviventris anglica,* found in Texas and northern Mexico.

Fletcher and Inglis on some common Indian Birds.

[Some common Indian Birds; nos. 1–15. By T. Bainbridge Fletcher and C. M. Inglis. Agricult. Journ. India, vols. xvi.–xvii., 1920–1922.]

This series of fifteen articles dealing with the more familiar Indian birds has been prepared by Mr. Fletcher, the Imperial Entomologist to the Government of India, and Mr. Inglis, a member of our Union. The general habits are dealt with at length, and particular attention is paid to their economic importance from the agricultural point of

view. Each article is illustrated with a coloured plate, apparently prepared by Mr. Inglis, though the name of the artist is nowhere definitely stated. They are carefully drawn, though perhaps a little stiffly, but will enable anyone to recognize the bird, and will, no doubt, prove of great service to all those who are interested in Indian farming.

Flower on the Giza Zoological Gardens.

[Report on the Zoological Service for the year 1921, in which is included the 23rd Annual Report of the Giza Zoological Gardens. By Major S. S. Flower, O.B.E., etc. Pp. 1–18, Cairo (Govt. Press), 1922.]

Major Flower's annual report shows that the Giza Zoological Gardens continues to prosper and attract large numbers of visitors and that the collections are well maintained. In order to replenish the stock of animals the Director made an expedition to the Sudan in the winter of 1920–1 and was able to secure some interesting specimens, among them a Duck, *Fuligula brunnea,* from Kordofan which does not appear to have been recorded from so far north previously. Another addition to the Egyptian fauna is the Barbary Partridge, *Alectoris barbara*, examples of which have been obtained by Major E. A. T. Bayly in the Mursa Matrûh district of north-west Egypt. These are probably referable to the form recently described by Salvadori and Festa as *Caccabis callolæma,* but not recognized as distinct by Hartert in his last supplement to the Vög. pal. Fauna.

Grote on new African Birds.

[Bemerkungen über einige neue afrikanische Formen. Von Hermann Grote. Journ. Ornith. 1922, pp. 397–404; also Orn. Monatsber. xxx. 1922, pp. 86, 87.]

Dr. Grote has recently been devoting himself very assiduously to the study of African birds, and in these two papers provides new names of eight subspecific races as follows:—*Musophaga violacea savannicola* from the grasslands of eastern Cameroon, *Hypochera chalybeata camerunensis* from S.E. Cameroon, *Plocepasser superciliosus brunnescens* E. Cameroon, *Estrilda* (*Lagonosticta*) *senegala zedlitzi*

Tanganyika Territory, *Pytelia melba conradsi* Ukerewe Island in Victoria Nyanza, *Steganura paradisea interjecta* S.E. Cameroon, *Turdus libonyanus adamauæ* from Adamawa, Cameroon, *Cinnyris mediocris usambaricus* Usambara in Tanganyika Territory. The last-named is described in the Orn. Monatsber., all the others in the Journ. Ornith.

Hamer on Sexual Selection.

[Territorialism and Sexual Selection. By A. H. Hamer. S. Afr. Journ. N. H. iii. 1922, pp. 54–59.]

In this short paper Mr. Hamer suggests as an explanation of the bright colours and ornaments, as well as the song of male birds, usually explained by the theory of sexual selection, that these may be accounted for as adjuncts to territorialism. He believes that the possession of these ornaments by an individual bird acts as a warning to other males who may be trespassers on his territory, and that by this means fights are avoided. We fear that even if there are any grounds for Mr. Hamer's suggestion, he has hardly in the short space at his disposal been able to bring sufficient arguments to bear, in order to settle a question of this magnitude.

Hartert on Central and Eastern Asian Larks and Wrens.

[Alaudidæ und Troglodytidæ von E. Hartert: in Zoologische Ergebnisse der Walter Stötznerschen Expeditionen nach Szetschwan, Osttibet und Tschili auf Grund der Samlungen und Beobachtungen Dr. Hugo Weigolds. Abhandl. Ber. Zool. Anthrop. Mus. Dresden, xv. 1922, no. 3, pp. 19–22.]

The chief point brought out by Dr. Hartert from an examination of the Asiatic Larks is that the *Arvensis gulgula* group must be henceforth treated as subspecies of *A. arvensis*. Two new subspecies are proposed, *Alauda arvensis weigoldi* from central China and *A. a. hainana* from Hainan.

Kuroda on the Birds of Hainan.

[On a collection of birds from Hainan. By Nagamichi Kuroda. Dobs. Zasshi [Zoological Magazine], 1921, pp. 389–393.]

This is a short paper on a collection of birds from Hainan.

It is entirely in Japanese, so that except for the names of the birds recorded it is difficult to offer any remarks. The pale eastern form of the Kestrel (*Cerchneis tinnuncula perpallida* or *C. t. dorriesi*) appears to occur as a migrant.

Kuroda on new Japanese Birds.

[Description of four new birds from the Islands of Japan and Formosa. By Nagamichi Kuroda. Annot. Zool. Japonenses, x. 1922, pp. 115–118.]

The new subspecies are as follows:—*Yungipicus kizuki shikokuensis*, Prov. Izu, Japan; *Microscelis amaurotis harterti*, Botel Tobago near Formosa; *Horornis cantans ijamæ*, Seven Islands of Izu, Japan; *Sittiparus varius amamii*, Amami-oshima, Loo-Choo Islands.

Lönnberg on the protection of the Golden-eye.

[Knipstammen bör vårdas och holker uppsättas. Af Einar Lönnberg. Pp. 1–14, 3 text-figs. Uppsala, 1922.]

This little pamphlet, the source of which is not indicated, deals with the provision of nesting-boxes for the encouragement and protection of the Golden-eye in north Sweden. By this means the eggs can be taken for food and a sufficient stock finally preserved to keep up the supply in future years. The same method has been applied to the Goosander, but as this bird is very destructive to fish it is not so good a subject for encouragement.

McGregor on Philippine Birds.

[New or noteworthy Philippine Birds, iv. By Richard McGregor. Philippine Journ. Sci. vol. 19, 1921, pp. 691–703, 4 plates, 3 text-figs.]

This paper contains miscellaneous notes on various rare Philippine birds. The Chinese Francolin, *Francolinus pintadeanus* (olim *chinensis*), appears to have been introduced and become established in Luzon near Manila, and Mr. McGregor has received a nest of eggs as well as the adult birds. Some additional particulars and dimensions are given of the Monkey-eating Eagle, *Pithecophaga jefferyi*, with an outline sketch of the tail. The rare Spine-tailed Swift of Mindanao, *Chætura picina* Tweed., has been

rediscovered; it has not been seen for twenty years, when Mearns obtained a few examples. The rare and remarkable *Malindangia macgregori* Mearns, discovered by the describer on Mt. Malindang in Mindanao, is figured in colour. Mr. McGregor believes that there are still a good many new discoveries to be made by the diligent collector in the Philippine Archipelago.

Mathews on Australian Birds.

[The Birds of Australia. By Gregory M. Mathews. Vol. ix. pt. 8, pp. 361–416, pls. 443–448 & 481. London (Witherby), May 1922.]

The concluding pages on the Australian Reed-warbler adhere to the previously published five subspecies, and reinstate *mellori* for *inexpectatus*, Gould's species *longirostris* now taking the lower rank.

The generic titles of the three Grass-birds or Grass-warblers give no fresh trouble, nor does Mr. Mathews depart from his former conclusions as to the species; but two new subspecies are introduced under *Cisticola exilis* (*diminuta* of North Queensland and *exaggerata* of Victoria and South Australia); *milligani* is substituted for *striatus* under *Poodytes gramineus*; while under *Dulciornis alisteri* we are again warned that its former name of *galactotes* V. and H. is untenable, owing to a prior use in the 'Planches coloriées.' In each genus only one species is recognized for Australia, though Sharpe was wrong in placing under this genus forms reaching from Burma to China. They compose a very interesting group of little ground-birds, found in scrubby places, with a preference for marshy spots; and, though by no means flightless, are difficult to flush or observe, only flitting for short distances with drooping and expanded tail. They are all variable in plumage, and *Cisticola* at least is "seasonally dimorphic."

The next three birds, figured on one plate, are of such importance that we must refer the reader to Mr. Mathews's pages for full details of their life-histories. Literary history they have little or none. First, we have the Desert or Spinifex Bird, discovered by Carter in 1898 in the west, and

called after him *Eremiornis carteri*, of which the nest and eggs have only recently been discovered. Three subspecies have now been proposed, one from the coastal islands.

Secondly, we come to the Rock-warbler of the rocky gullies and river-sides, of which we can gain the best impression by comparing it to the British Dipper, as it flits from rock to rock, uttering shrill cries, while the nest is similarly built on a rock-face and resembles a ball of herbage. To the reviewer, when in Australia, the bird seemed very shy and long absent from its eggs, and he particularly noticed that the strand by which the nest was attached to the roof of a cave was flat and thin, like an ordinary piece of elastic. The name is now *Origmella*, in place of *Origma* preoccupied. The specific name *rubricata* is shown to have been quite wrongly applied.

The Little Field-Wren is proved by the Lambert drawings to be Latham's Streaked Warbler and is therefore named *Chthonicola sagittata*. In habits it is hardly less interesting than the preceding forms.

The Australian "Tits" begin in this part with the synonymy and figures of *Acanthiza pusilla*.

Momiyama and Kuroda on the Birds of Micronesia.

[Birds of Micronesia. By Tokutaro Momiyama. A list of the Birds of the Micronesian group, with descriptions of two new forms. By Nagamichi Kuroda. English text pp. 1–31, Japanese text, pp. 1–339, 1 map and 6 plates, 3 coloured. Tokio (Orn. Soc. Japan), 1922, 8vo.]

Micronesia consists of the Pelew, Marianne, and Caroline groups of islands situated in the Western Pacific between 130° and 165° E. long. and between the equator and 10° N. lat. They formerly belonged to Germany, but under the Paris Treaty passed into the possession of Japan. The present volume, which is partly in Japanese and partly in English, contains a complete list of the birds of these three groups of islands numbering 152 species and subspecies, and is illustrated with two good maps and a number of coloured and uncoloured plates and text-figures. The list of the species is prefixed by the description of the new forms

by Messrs. Momiyama and Kuroda. The former proposes two new generic names: *Kubaryum* for type *Zosterops oleagina* Hartl. & Finsch, and *Rukia* for type *Tephras ruki* Hartert (Zosteropidæ); he also describes the following new subspecies: *Globicera oceanica teraokai* from Ruk Island in the Middle Carolines and *G. o. monacha* from Yap, Western Carolines, also four new races of *Aplonis opaca*, three of *Myzomela rubatra*, and one of *Zosterops semperi*; while Mr. Kuroda adds two other new races, *Globicera oceanica momiyamai* and *Erythrura trichroa pelewensis*, both from the Pelews.

Murphy on some American Petrels.

[Notes on Tubinares, including records which affect the A. O. U. Check-list. By Robert Cushman Murphy. Auk, xxxix. 1922, pp. 58–65.]

This paper deals with the status of three Petrels as regards their occurrence in North American waters. The first, *Thalassarche chlororhynchus*, the Yellow-nosed Mollymauk, is added to the North American fauna on the strength of a specimen taken off Seal Island, Maine, in August 1913. The second, *Calonectris k. kuhlii*, is also added to the North American fauna, since the author recently found, among a number of examples of *Puffinus borealis*, four smaller birds which he identifies with the Mediterranean Shearwater, taken near Long Island. These are now in the collection of Dr. Dwight. It seems remarkable that these two closely allied subspecies should both occur together off the New York coasts in August and October.

The third species dealt with is *Oceanodroma hornbyi*, until quite recently known only from the original type in the British Museum and obtained by Admiral Hornby while in command of the Pacific Station, possibly on the north-west coast of America. Recently it has been met with off the coast of Chile and Peru by Mr. R. H. Beck, and Mr. Murphy identifies it with *Procellaria collaris*, described by Dr. Philippi in 1895, and since overlooked. Dr. Philippi's bird was obtained on the tableland east of Taltal, at a considerable altitude and was supposed to be nesting there. It

certainly appears to be a remarkable fact to find an *Oceanodroma* breeding at a mainland site, but we have no other clue to its breeding place. Mr. Murphy proposes to remove this species from the list of North American birds.

Van Oort on the Birds of Holland.

[Ornithologia Neerlandica. De Vogels van Nederland door Dr. E. D. van Oort. Pts. 13/14, 20 pls. 's Gravenhage (Nijhoff), 4to.]

The present instalment of this fine work on the birds of Holland contains only plates, no text. These plates deal with the Birds of Prey, some of the Rails and Shore-birds, and the artist, Mr. Koekkoek, seems to improve as he goes on. Most of his pictures are excellent, perhaps a little subdued in tone, but none the worse for that, as the tendency of most bird-artists is to over-colour their plates. Nearly all the species figured also occur in Great Britain, and are familiar to us all, but the Lesser Spotted Eagle, which is portrayed on plate 112, has not so far been placed in the British list. A special feature of these plates is that the several plumages of each species are in most cases represented.

Petronievics on Archæopteryx.

[Ueber das Becken, den Schultergürtel und einige andere Teile der Londoner *Archæopteryx*. (2 plates.) By Branislav Petronievics Geneva, 1921.]

During a visit to London in 1916, Professor Branislav Petronievics of Belgrade University persuaded the authorities of the British Museum (Natural History) to have their famous skeleton of *Archæopteryx* further cleaned from the matrix, with the result that a number of new and interesting points in the structure of the shoulder-girdle and pelvis were revealed. A short preliminary account of these discoveries was given by Prof. Petronievics and Dr. A. Smith Woodward in the 'Proceedings of the Zoological Society,' 1917, p. 1. The two authors did not agree as to all details, and in the paper now noticed Prof. Petronievics gives a full account of his views as to the structure of *Archæopteryx* and of *Archæ-*

ornis, a generic name which he gave to the Berlin specimen, usually known as *Archæopteryx siemensi* Dames (see Proc. Zool. Soc. 1917, p. 5). The coracoid, which is short and broad, is shown to be that of a ratite rather than of a carinate bird, and is, moreover, not unlike the coracoid of some reptiles. The pelvic bones remain separated by sutures, and all take part in enclosing the perforate acetabulum. There is a long pubic symphysis much like that seen in some Dinosaurs. The only recent bird in which there is a pubic symphysis is *Struthio*, but even there it is of quite a different form. The second section of the paper is devoted to a detailed account of the numerous differences between the two specimens (London and Berlin), and their generic separation seems fully justified. The author even states that they may have belonged to different families, a suggestion made many years ago by Professor Seeley (Rept. British Assoc. York for 1881, 1882, p. 618).

Petronievics furthermore institutes an elaborate comparison between the pelvis and shoulder-girdles of *Archæopteryx* and *Archæornis* and those of the various groups of reptiles. As a result of these comparisons he arrives at the following conclusions :—

1. "The birds are undoubtedly derived from the reptiles."
2. "The ancestors of the birds are to be sought among the Lacertilia, or at least the birds and Lacertilia had a common ancestor ; this conclusion seems to rest mainly on the structure of the coracoid."
3. "The similarity between birds and Dinosaurs is due to convergence."
4. "*Archæopteryx* is more primitive than *Archæornis* in the structure of its pelvis and shoulder-girdle."
5. "*Archæopteryx* either stands nearer the generalized type of bird from which both the Carinatæ and Ratitæ arose or closely represents that type, since, on the one hand, it possesses the developed wings of a Carinate, and, on the other, the primitive coracoid and probably keelless sternum of the Ratite." Here, however, it

may be remarked that nothing whatever is known about the sternum of *Archæopteryx*.

6. "The separation of the birds into the Carinate and Ratite groups had already begun in Jurassic times."

In one point Professor Petronievics' nomenclature cannot be adopted. The London specimen was described by Owen under the name *Archæopteryx macrura*. This is objected to by Petronievics on the ground that the trivial name *macrura* applies equally to *Archæopteryx* and *Archæornis*, both possessing long tails. He therefore suggests the name *Archæopteryx oweni* for the London specimen, an entirely inadmissible alteration.

Sachtleben on Lithuanian Birds.

[Beiträge zur Natur- und Kulturgeschichte Lithauens und angrenzender Gebiete, von E. Stechow. Vögel von Dr. H. Sachtleben. Abhandl. Bay. Akad. Wiss. München, Suppl.-Bd. 1 Abh. 1922, pp. 9-232, 1 pl.]

This is an elaborate and intensive study of the birds of Lithuania, based primarily on the collections of Dr. E. Stechow, made in the Grodno Government in 1918. This, together with other smaller collections, gave Dr. Sachtleben 936 skins representing 116 forms to work on. Each species is dealt with at considerable length, and the plumage-development, plumage-changes, individual variation, and geographical variations are considered in detail. This is especially the case with the Nuthatches *Sitta e. europæa* and *S. e. homeyeri*, to the discussion of which twenty-five pages and a coloured plate are devoted. In this he shows very clearly the gradual change from the Italian bird with the richly coloured underparts to the Swedish one with the almost white underparts.

Dr. Sachtleben has not attempted a complete account of the birds of Lithuania, as this task is being undertaken by Count Zedlitz in a series of papers in the course of publication in the Journal für Ornithologie.

Schiøler on Danish Birds.

[Nogle tilføgelser og bemaerkninger til lister over Danmarks fugle. Af E. Lehn Schiøler. Dansk. Orn. Foren. Tidssk. xvi. 1922, pp. 1–55.]

Some fifteen years ago Mr. H. Winge published a list of Danish birds in the 'Journal of the Danish Ornithological Society.' In the present paper the author mentions a few additional species and races since recorded, and revises the account of the distribution of some of the other species. Among the more interesting details he mentions that the Plover breeding in Denmark is very similar to the race *Charadrius apricarius oreophilus* recently described by Mrs. Meinertzhagen. The Danish breeding Dunlin is discussed at considerable length, and is identified with *Erolia alpina schinzi* recently discriminated by Hartert. The Cormorant is now only a winter visitor; it has been exterminated as a breeding-bird, and the Egyptian Vulture, *Neophron percnopterus*, has been added to the Danish list, a young bird having been taken on the island of Zeeland in August 1918.

Shufeldt on the Bermudan "Cahow."

[A comparative study of some subfossil remains of birds from Bermuda, including the "Cahow." By R. W. Shufeldt. Ann. Carnegie Museum, Pittsburg, xiii. 1922, pp. 333–418.]

Several years ago Dr. Shufeldt described in 'The Ibis' three extinct Petrels, including the "Cahow," from bones collected in Bermuda. The present paper appears to be a redescription of the same material together with a comparative study of the relationship of the new species with various forms of living Petrels. The different points brought out by the author are illustrated by a large number of plates. Curiously enough, Dr. Shufeldt makes no reference to his paper in 'The Ibis,' and one is led to suppose that the three species are being described for the first time, whereas in reality the original descriptions appeared in this Journal for 1916.

Swarth on the Birds of the Stikine River, British Columbia.

[Birds and Mammals of the Stikine river region of northern British Columbia and south-western Alaska. By H. S. Swarth. Univ. California Publ. in Zool. vol. 24, 1922, pp. 125-314, 1 coloured plate, map, and 34 figs. in text.]

In the summer of 1919, between May and September, Mr. Joseph Dixon and the author made an excursion to the lower waters of the Stikine River, which, rising in northern British Columbia and the eastern side of the Rocky Mountains, pierces that chain in a deep canyon and flows through the narrow strip of southern Alaska into the sea near Wrangell between lat. 57° and 56° N. The locality is an interesting one, as the fauna and flora of the country east and west of the Rocky Mountains are very different. The Sitkan district of south-west Alaska is characterized by intense humidity and a relatively equable temperature, and the country is mostly covered by dense coniferous forest. On the other side of the range the climate is characterized by very great extremes of heat and cold, and the rainfall is so small that it is necessary to irrigate cultivated land. The problem studied by Mr. Swarth was how this sudden change of climate affected mammal- and bird-life, and he naturally found that the faunas of the two areas were very different. The paper, which is a long one, contains an itinerary and a description of the localities visited, the topography of the region and its bearing on animal life, and the zonal and faunal position of the Stikine Valley. Then follows the annotated list of the mammals and birds met with and obtained; the latter number 127 species. Perhaps the most interesting observations are in regard to the Bohemian Waxwing, *Bombycilla garrula pallidiceps*. Very little is known about the nesting of this bird in America, but Mr. Swarth and Mr. Dixon found eight nests with eggs and young birds, and the coloured plate forming the frontispiece depicts the nestlings just out of the nest with the waxy tips to the secondaries already in place.

Thomson on the migration of Starlings.

[The migrations of British Starlings: results of the marking method. By A. Landsborough Thomson. Brit. Birds, xvi. 1922, pp. 62–66.]

Mr. Landsborough Thomson has collected all the records of the recovery of ringed Starlings, and has analysed them carefully. Altogether over 9000 have been marked in England and Scotland, and 472 recovered. Large numbers have also been ringed on the continent. He comes to the conclusion that our native bred Starlings are almost altogether sedentary, though a few move about for short distances, but there is no evidence of an extensive migration of our native bird across the channel to France during the winter. On the other hand, there is an extensive immigration of Starlings into England during the winter months from Scandinavia, Finland, the Baltic Provinces, and eastern Germany, while birds breeding in central Germany move to Spain and Portugal, and those residing in Hungary to Italy and Tunisia.

Ticehurst on the Birds of Mesopotamia.

[The Birds of Mesopotamia, Pts. i. & ii. By Claud B. Ticehurst, assisted by P. A. Buxton and Major R. E. Cheesman. Journ. Bombay N. H. Soc. xxviii. 1921, pp. 210–250, 2 plates, and pp. 269–315, 2 plates.]

This long expected paper, the first two parts of which are now before us, dealing with the Passerine, Picarian, and Accipitrine birds, is the result of the co-operation of a number of observers and collectors, in addition to the three authors.

An introduction deals with the geography and ecological divisions, migration and status of the species composing the avifauna. The number of specimens dealt with is 2500 comprising 241 species out of 330 known to occur; of these only 78 appear to be residents, while 128 are winter visitors.

The list is drawn up under the specific names, but the races are also given and discussed at length, and the subspecific distinctions are noted. The specimens actually obtained are mentioned, and the paper, when complete, will

undoubtedly be invaluable to all those ornithologists whom duty or pleasure takes to the burning plains of Irak in the near future. The illustrations are from photographs of characteristic scenery, and among the contributors, in addition to the authors, are Sir Percy Cox, Sir R. Egerton, Capt. C. R. Pitman, Col. F. M. Bailey and Col. H. H. F. Magrath, most of whom are members of the Union. We shall look forward to seeing the paper in its complete form before long.

Readers should be warned that the separate copies are dated Dec. 30, 1920, and paged 197–237 ; the correct date is Dec. 30, 1921, and the paging as given above. The Editor of the Bombay Journal seems very slipshod in this respect.

Wetmore on Fossil Birds from Porto Rico.

[Bird remains from the caves of Porto Rico. By Alexander Wetmore. Bull. Amer. Mus. N. H. xlvi. 1922, pp. 297–333, 24 text-figs.]

The birds described in the present paper were collected by Mr. H. E. Anthony, chiefly in the cave deposits of the island of Porto Rico. Mr. Anthony himself has worked out the numerous mammalian remains and has handed over those of the birds to the present author. The number of species listed is 42, of which 6 have been described as new, either in the present paper or previously. Among these is a Caracara, *Polyborus latebrosus*, a Snipe, *Gallinago anthonyi*, a Quail-dove, *Oreopeleia larva*, a Barn-Owl, *Tyto cavitica*, while a curious Rail, *Nesotrochis debooyi*, and a remarkable Goatsucker, *Setochalcis noctithera*, have been previously described elsewhere. The presence of the coracoid of a domestic fowl, *Gallus*, seems to show that the age, anyhow of some of the deposits, is not precolumbian. Nearly all the remains found are those of the smaller birds and mammals, and Mr. Wetmore believes that most of them have come from the pellets of Owls which are partial to caves and caverns. One species, *Gymnasio nudipes*, is still living on Porto Rico, while the remains of another, *Tyto cavitica*, suggest that a second species was also responsible for these

collections of pellets; the age of the deposits and bones is somewhat doubtful, but they are no doubt all comparatively recent geologically speaking, perhaps in some cases extending back for one or two thousand years.

Witherby on British Birds.

[On the White-billed Northern Diver as a British Bird. British Birds, xvi. 1922, pp. 9–12, 4 photos.]

Mr. Witherby finds amongst the many British records of *Colymbus adamsii* only two which he is able to confirm with certainty—one taken December 1829 in Northumberland, now in the Hancock Museum at Newcastle, and one taken in the spring of 1852 near Lowestoft, now in Mr. J. H. Gurney's collection. Mr. Witherby has been unable to examine three records. He adds some remarks on the differences between the ordinary Great Northern Diver and the White-billed Northern Diver.

Natureland.

[Natureland. A quarterly Journal of Natural History. Vol. i. nos. 1–3, 1922. Manchester (Sherratt & Hughes).]

We have recently received the first three numbers of this new magazine of popular natural history. It is edited by Dr. Graham Renshaw, who was for some years editor of the 'Avicultural Magazine'; he has also enlisted the help of Dr. W. E. Collinge, Sir Harry Johnston, Dr. R. W. Shufeldt and others to assist him. The numbers before us contain a good many articles relating to birds by Messrs. W. Shore Baily, A. H. Patterson, C. B. Horsbrugh, and the Marquis of Tavistock, and are illustrated with well-selected and excellent half-tone blocks. We wish Dr. Renshaw every success in his new venture. The yearly subscription is 10*s.* 6*d.*

Nature-Lover.

[The Nature-Lover. A monthly magazine. Vol. i. nos. 1–4, March–June, 1922. London (John Bale & Danielsson).]

This is another magazine of nature-study or popular

natural history, and is edited by Dr. F. H. Shoosmith. The articles, which are all anonymous, deal with the various aspects of nature from the Phases of the Moon to the Song of the Wood-Wren, and are well and appropriately illustrated. The frontispiece of each number is a reproduction in colour of a Japanese Bird Study.

Provencher Society of Nat. Hist.

[The Provencher Society of Natural History. Pp. 1–48. Quebec: no date.]

The Provencher Society has recently been founded in Quebec for encouraging the study of Natural History and especially for the preservation of the Canadian fauna, and in fact to take on the functions of the Audubon Societies of the United States in Canada. The Society derives its name from the Rev. L. Provencher, described as the Great Canadian Naturalist. The present publication has, in addition to the regulations and the list of members, a number of short notes on natural history subjects and some pleasing coloured plates of the commoner Canadian birds. One remarkable feature of the publication is that commencing from one cover the first 48 pages are in English, while commencing from the other cover there are some 39 pages of French text with distinct notes and illustrations.

Contents of recent Ornithological and other Journals.

Aquila, vol. xxxviii. for 1921, publ. 15 May, 1922.

Gorgey, T. Memoir on the late Stefan von Chernels (1906–1922), successor of Otto Herman as editor, with bibliography and portrait.

Nagy, E. On the avifauna of the great marsh of Panesova; with plan and photographs.

Greschik, E. The anatomy of the tongue and hyoid of *Plegadis falcinellus*; with four text-figures.

Schenk, J. Migration dates in Hungary for 1921, and also some previous ones omitted "on account of political circumstances."

Chernel, S. von. Spring migration notes from Lake Balaton.

Schenk, J. On the winter-quarters of the White Stork and on the last colony of Great White Egret in Hungary.

Ardea, vol. xi. no. 1, June 1922.

Verwey, J. Observations on migration over the North Sea made during a stay on a Lightship on the Doggerbank between 26 August and 23 September, 1920.

'T Sant, L. van. The Rhineland Marsh-Tit (*Parus palustris longirostris*), a breeding bird in Holland and relationship to the Willow Tit (*Parus montanus salicarius*).

Portielje, A. F. J. On some remarkable instincts and habits in birds.

Brouwer, G. A., and **Verwey, J.** Migration observations on the Island of Rottum, near the mouth of the Weser, from 19 July to 1 September, 1921.

Lieftinck, F. Notes on the nesting-habits of Montagu's Harrier (*Circus pygargus*); with two photos.

Auk, vol. xxxix. no. 3, July 1922.

Richmond, C. W. In memoriam: William Palmer, born 1 August, 1856, died 8 April, 1921; with portrait.

Lincoln, F. C. Trapping ducks for banding purposes, with an account of the results obtained from one waterfowl station; 4 photos.

Talbot, L. R. Bird-banding at Thomasville, Georgia, in 1922; 3 photos.

Gibson, L. Bird-notes from North Greenland.

Kuroda, N., and **Mori, T.** On some new and rare birds from Corea. *Dryobates major scoulensis*, *Tetrastes bonasia coreensis* described as novelties.

Sanborn, C. C. Recent notes from an old collecting-ground in north-eastern Illinois.

Grinnell, J. The role of the "accidental."

McAtee, W. L. Notes on food-habits of the Shoveller or Spoonbill Duck (*Spatula clypeata*).

Saunders, A. A. The song of the Field-Sparrow (*Spizella pusilla*).

Harlow, R. C. The breeding-habits of the Northern Raven in Pennsylvania.

Austral Avian Record, vol. v. no. 1, July 1922.

Mathews, G. M. Additions and corrections to the Check-list of the Birds of Australia. *Cormobates* for type *Certhia leucophæa* Lath., *Dipardalotus* for type *Pardalotus v. yorki* Math., *Sugomel* for *Myzomela n. ashbyi* Math. are all proposed new genera; there are also several new races named.

——. Notes of interest of a bibliographical nature; dates of publication, etc.

Mathews, G. M., and **Iredale, T.** Thomas Watling, artist: biographical matter, with reproduction in colour of seven of the Watling drawings, with notes.

Avicultural Magazine (3), vol. xiii. nos. 5–7, May–July 1922.

Blaauw, F. E. Notes on the birds of North America.

Astley, H. D. A Chinese Whistling Thrush (*Myiophoneus cæruleus*).

Seth-Smith, J. The Kagu (*Rhinochetus jubatus*); with photo.

Knobel, E. M. Record of the number of red tail-feathers in a Grey Parrot.

Delacour, J. Notes on field ornithology and aviculture in tropical America.

Bird-Lore, vol. xxiv. nos. 3, 4, May & August 1922.

Frontispiece.—Green-winged Teal in colour by Allan Brooks.

Levis, H. F. Bonaventure Island and Perce rock where the Gannets breed in the Gulf of St. Lawrence.

Burrows, I. Two photographs of Humming-birds and nest.

Gabrielson, I. N. Factors contributing to the destruction of birds' nests and eggs.

Driver, E. R. Birds bathing.

Foster, G. S. A bird sanctuary in a small residential garden; photos.

Wright, M. O. Little stories from Bird-craft Sanctuary. 1. A Humming-bird Waif; photo.

Hunter, K. W. In the nesting-season.

Mills, S. R. My neighbours, the Nighthawks; photos.

Oberholser, H. C., and **Chapman, F. M.** The migration and plumages of North American birds. The Boat-tailed Grackles. With coloured plate by Fuertes.

Bird-Notes (3), vol. v. nos. 5–7, May, June, July 1922.

Baily, W. S. May in my aviaries, with photo of Algerian Chaffinch brooding.

Wood, C. A. Notes on Jungle and other Wild Life.

Crandall, L. S. Notes on some forms of Yucatan Jays (*Cissolopha*).

Viscount Grey of Falloden. In my Bird Sanctuary [reprinted from Pearson's Magazine].

Baily, W. S. June and July in my aviaries; with photos.

Reeve, T. S. A Cuckoo episode.

British Birds, vol. xvi. nos. 1–3, June, July, and August 1922.

Wilkes, A. H. P. On the breeding-habits of the Glaucous Gull as observed on Bear Island and in the Spitsbergen Archipelago; 4 photos.

Witherby, H. F. On the White-billed Northern Diver as a British Bird; 4 figs.

——. Recovery of marked birds.

Oordt, G. J. van, and Huxley, J. S. Some observations on the habits of the Red-throated Diver in Spitsbergen; 8 photos.

Thomson, A. L. The Migrations of British Starlings: results of the marking method.

Witherby, H. F. Note on the six ringed Swallows captured in South Africa; with a sketch-map.

Brooklyn Museum Quarterly, vol. ix. no. 3, July 1922.

Murphy, R. C. Tenth contribution on the sea-coast and Islands of Peru; with many photos.

Canadian Field-Naturalist, vol. xxxvi. nos. 3–5, March, April, May 1922.

Townsend, C. W. The summer birds of Advocate, Cumberland County, Nova Scotia.

Lloyd, H. Some of Captain Henry Toke Munn's observations on the birds of Baffin Island and vicinity.

Williams, M. Y. Biological notes along fourteen hundred miles of the Mackenzie river system.

Smith, F. N. The American Hawk-Owl (*Surnia ulula caparoch*).

Taverner, P. A. The disappearance and recovery of the Eastern Bluebird.

Farley, F. M. Summer birds of the Lac La Biche and Fort McMurray region.

Taverner, P. A. Adventures with the Canada Goose.

Munro, J. A. Notes on the water-birds of Lake Newell, Alberta.

Bradshaw, F. The Hungarian or European Grey Partridge in Saskatchewan.

Condor, vol. xxiv. nos. 3, 4, May, July 1922.

Whittle, C. L. Miscellaneous bird-notes from Montana; 2 illustrations.

Brooks, A. Notes on the American Pine Grosbeaks, with the description of a new subspecies, *Pinicola enucleator carlottæ*, from Queen Charlotte Islands.

Hanna, G. D. The Aleutian Rosy Finch, *Leucosticte griseonucha*, field-notes; 1 photo.

Mailliard, J. Eggs of the Aleutian Rosy Finch; 1 photo.

Hill, G. A. With the Willow Ptarmigan in Alaska; 4 photos.

Ritter, W. E. Further observations on the activities of the Californian Woodpecker and its food-habits.

Miller, L. Fossil birds from the Pleistocene of McKittrick, California.

Todd, W. E. C. *Aimophila ruficeps canescens*, subsp. nov., from southern California.

Mailliard, J. Status of the Crested Jays on the north-western coast of California; with a map.

Dansk Ornithologisk Forenings Tidsskrift,
vol. xvi. pts. 1/2, May 1922.

Schiøler, E. L. Additions and corrections to the list of Danish Birds.

Suomalainen, E. W. Obituary notice, with portrait, of Johan Axel Palmen (1845–1919), a well known Finnish ornithologist.

Emu, vol. xxi. no. 4, April 1922; vol. xxii. no. 1, July 1922.

Campbell, A. J. The Lyre-bird, *Menura hollandiæ* Latham. A key to varieties or subspecies; with col. plate.

Roberts, S. Prince Edward's Lyre-bird at home; with map and photos.

Ashby, E. The Dusky Miner (*Myzantha obscura* Gould) with its subspecies, compared with the Yellow-throated Miner (*Myzantha flavigula* Gould).

Alexander, W. B. Observations and records of Australian Sea-birds, 1920–1.

Hull, A. F. B. A visit to the Archipelago of the Recherche, S.W. Australia. Narrative and list, with photos.

Stidolph, R. H. D. Birds observed near Wellington, N.Z.; map.

Shufeldt, R. W. On the Skeleton of the Wedge-tailed Eagle (*Uroaëtus audax* Latham); 6 pls.

Campbell, A. J. The Buff-breasted Quail, *Turnix olivii*; with coloured plate, and description of nest and eggs by H. L. White; with photos.

Chisholm, A. H. The "lost" Paradise Parrot, *Psephotus pulcherrimus*, supposed to be extinct, recently rediscovered; with photos.

Cleland, J. B. A method of taking a bird census.

Morse, F. C. Birds of the Moree district, New South Wales; map and photos.

Norton, S. P. W. Bird notes from Boree, New South Wales.

Oliver, W. R. B. The birds of Little Barrier Island, N.Z.; photos.

Le Souëf, A. S. Notes on Sea-birds between Sydney and England.

Stuart-Sutherland, R. Notes on birds observed round a light-house at Puysegur Pt., New Zealand; photos.

Fletcher, J. A. Field-notes on the Black Bell-Magpie, *Strepera fuliginosa*, in Tasmania; photos.

Campbell, A. G. New subspecies of Tit-Warblers—five new races of *Acanthiza* and five of *Geobasileus*.

Fauna och Flora, for 1922, no. 3.

Lönnberg, E. On an example of *Colymbus adamsii* obtained at Umea in northern Sweden; with 1 figure.

——. On the present status and distribution of the Golden Eagle in Sweden, derived from reports of the forest officers to the Central Office of the Royal Domains.

Gerfaut, vol. xii. pt. 1, 1922.

Dupond, C. Account of the occurrence of a Pallid Harrier (*Circus macrourus*) in Belgium in April 1921.

——. On the occurrence of the Eastern Skylark in Belgium.

Hornero, vol. ii. no. 4, April 1922.

Dabbene, R. The Petrels and Albatrosses of the southern Atlantic; pt. 3, with outline figures and maps.

Bennett, A. G. Notes on sub-antarctic birds:—i. The problem of migration in regard to some of the South American birds. ii. The diminution of the number of eggs laid in the more southerly regions.

Daguerre, J. B. List of birds collected and observed at Rosas in the southern part of the State of Buenos Aires.

Dabbene, R. Account of an example of the Albatross, *Thalassogeron eximius* Verrill, captured in the estuary of the Plate River, with figures of the head.

Lehmann-Nitschie, R. The folk-lore of some South American birds.

Irish Naturalist, vol. xxxi. nos. 6, 7, 8, June–August 1922.

Pack-Beresford, R. Curlew's eggs in Wild Duck's nest.

Jaarbericht, Club van Nederl. Vogelk. vol. xii. pt. 2, 1922.

Riolte, P. C. Account of the avifauna of the Province Limburg, Holland: pt. 1, Accipitres; photo.

Journal für Ornithologie, vol. 70, parts 2, 3, April & July 1922.

Heyder, R. Supplementary notes on the Birds of Saxony.

Heinroth, O. On the relation between the weight of the bird, the weight of the egg, the weight of the clutch, and the duration of incubation. With seven tables of curves. A long and important paper of over a hundred pages.

Fehringer, O. The Birds of Macedonia. Field-notes made in 1917–18.

Berlepsch, H. Freiherr von. My ornithological autobiography.

Geyr von Schweppenberg, H. Freiherr. On theories of bird-migration; 10 text-figs.

Lucanus, F. von. Critical remarks on the foregoing.

Grote, H. Remarks on some new African races: seven new subspecies proposed.

Stresemann, E. Eight new subspecies proposed from New Guinea and the neighbouring islands.

Journal of the Bombay Natural History Society,
vol. xxviii. nos. 2 & 3, March & June 1922.

Baker, E. C. S. The Game Birds of India, Burma, and Ceylon. Pts. xxxi & xxxii. The genera *Alectoris* and *Perdix*, with plates of the Chukor and *Perdix hodgsoniæ*.

——. Hand-list of the Birds of India. Pts. v, vi.

Ticehurst, C. B. The Birds of Mesopotamia. Pts. i & ii; 4 photos.

Osmaston, B. B. Birds of Pachmarhi, Central Provinces; 4 photos.

Benson, C. E. Egret farming in Sind; 2 pls.

Trench, C. G. C. Egret farming in India.

Field, F. Rough list and notes of birds found breeding in the Gonda District, Oudh.

London Naturalist for 1921 (published 1922).

This is the new title of the Journal of the London Natural History Society.

Fenton, R. H. The Cuckoo.

Report on the Birds of Epping Forest for the year 1921.

Oiseau. Revue d'Histoire naturelle appliquée,
vol. iii. nos. 4–7, April–July 1922.

Tavistock, Marquis of. An essay on the acclimatization of small Weaver-birds at liberty.

Berlioz, J. On the Parrots of the *Platycercus* group.

Legendre, M. The rearing and the diseases of birds in captivity.

Rochon-Duvigneaud. Bird-vision.

Millet-Horsin, Dr. Reminiscences of a naturalist in French West Africa.

Delacour, J. Account of his journey in Venezuela and the West Indies in search of birds.

d'Abadie, R. A case of embryonic malformation in a Blackbird's egg and young.

Merite, E. Cages and perches, their history and construction; with figs.

Oologists' Record, vol. ii. no. 2, June 1922.

B——, C. F. Nyasaland Notes, pts. ii. & iii. Fringillidæ and Laniidæ.

James, H. W. Description of the nest and eggs of *Spizaëtus bellicosus* (Daud.) and *Sternostira scita* (Vieill.).

Ornithologische Monatsberichte, vol. 30, no. 4, July–Aug. 1922.

Beckmann, K. O. Ornithological observations in southern Schleswig.

Schüz, E. A remarkable song of a Tree-Creeper.

Hammling, J. The Woodchat breeding in Pomerania.

Schiebel, G. The differences between a one-year old and adult Hazel-hen (*Tetrastes bonasia*).

Sunkel, W. On the race of the Marsh-Tit found in Hesse.

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XLIII.—*Letters, Extracts, and Notes.*

Cuckoos in the Gambia.

Sir,—The following record of the dates (since 1904) on which I have heard the first Cuckoo (presumably *C. gularis*) in the Gambia seems of sufficient interest to print:—

1904.	May 5.	Lamin Kotto, MacCarthy Island Province.
1906.	May 11.	Sajuka, Niumi, North Bank Province.
1909.	April 10.	Foni, Kombo and Foni Province.
1910.	April 26.	Niumi, N. B. P.
1911.	April 27.	Barrokunda, South Bank Province.
1912.	(Not heard by May 1, when I left the Colony.)	
1913.	April 19.	Barrokunda, S. B. P.
		(Then an interval till May 4.)
1914.	May 8.	Sutukung, S. B. P.
1918.	April 8.	Jappini, S. B. P.
1919.	April 7.	Jabba, S. B. P.
1920.	April 20.	Kudang, S. B. P.
1921.	April 23.	Bunni, N. B. P.
1922.	April 14.	Sika, N. B. P.

The rhyme applicable to the European bird will at first fit ours,

> "In April come he will,
> In May he sings all day,"

but it must continue:

> "By first of June,
> He's changed his tune,
> And does not fly
> In July,"

for I have occasionally seen and heard one calling as late as August, but a very "changed tune" by that time—a very short "cuck" followed by a prolonged "koo-o," an almost dove-like note.

E. Hopkinson.

Gambia, West Africa.
30 May, 1922.

A Defence of Egg-collecting.

Sir,—I have read the remarks made by Lord Buxton on the exhibition of clutches of birds' eggs at the last Oological Dinner, and also the letter in the July 'Ibis' signed by Messrs. Elwes and Stuart Baker.

It seems to me, however, that some defence of the much abused egg-collector is necessary against the attacks levelled by Lord Buxton and others, and, so far, I have not seen any attempt at this.

Although the point is much debated, let it be admitted that the collecting of eggs is of comparatively little scientific value. Let it also be admitted that it involves some cruelty, though of this more anon.

It must also be admitted that most forms of sport also, including hunting, fishing, and shooting, involve far more cruelty, and are just as needless. Yet I trust that few of us would like to see these sports abolished. Fish could be netted and killed quickly in preference to "playing" them: foxes could be shot: birds could be killed in some manner which precluded all chance of their being left to a slow and

lingering death, as occasionally happens. Yet if, as I consider justifiably, we allow such pursuits on the grounds of sport, health, and exercise, why strive to deny to others, who cannot afford such expensive forms of sport, the pleasure of their hobby?

Many clutches of eggs I have collected bring back memories of happy days by moor, wood, or stream, pitting one's intelligence against that of the birds, and learning much of interest from their habits. Such memories have the same satisfaction as those of a good run; of a fish hooked and landed, of a tall rocketer neatly killed.

I am only concerned in defending the *rational* egg-collector, who only takes such clutches as he requires, and often, at considerable sacrifice, leaves others he covets, as the taking of them might do harm.

The time-worn lines of attack are that egg-collecting is cruel, and deprives others of the delights of bird-life. I trust I may be permitted to deal with these arguments as briefly as possible.

It is idle to say that birds like their eggs being taken. It is, however, just as false to say their grief is inconsolable. A little observation will show the comparatively small concern birds have for their eggs compared to their young.

Any ornithologist knows for what slight reasons many birds will desert their eggs; indeed, it sometimes seems for no reason. Eggs are inanimate, and if the situation of the nest is unsuitable, or appears dangerous, instinct apparently teaches that it is better to desert the eggs than risk peril to the young. Compare with this the behaviour of birds when they have young, and further proof of the degree of affection felt for the two is unnecessary. Most birds will face very little peril for their eggs, while they will readily risk grave danger for their young.

Birds will sing the day after the eggs have been taken, and most species will again begin to nest in a few days.

Similarly, the argument regarding the diminution of our birds by egg-collecting is greatly overstated.

The large majority of birds will, provided the complete

clutch be taken, nest again, and the number of young reared in the year will be precisely the same. Those which do not nest a second time are known to the *rational* egg-collector, who frequently is at great pains to see they are not disturbed. Further, let it be remembered that a series of thirty clutches of the Tree-Pipit possibly represents a selection from over a hundred clutches, found during many years. I have a series of some fourteen clutches of this species myself, taken in five different countries, and assert confidently that by taking these I did not diminish the yearly number of birds reared. It is not the rational egg-collector who is diminishing the numbers of our birds, and the blame should be put on the right shoulders.

Those who do real damage to our bird-life are the schoolboy, the collector who cannot pass any nest without taking it, the keeper who has virtually exterminated many of our nobler birds of prey, and the many "sportsmen" who shoot every rarer visitor to our shores.

The blame for taking the last Osprey's nest in Britain is rightly attributed to an irresponsible egg-collector. Yet the fact that this was the last nest, and that the value of "British taken" eggs is high to some collectors, is entirely due to the keeper and game-preserver. There are many who would just as soon see some of our nobler birds of prey than listen to our smaller feathered songsters.

It is most justifiable to check and discourage the irresponsible collector and the schoolboy from damaging nests unreasonably, but I cannot see that this is sufficient reason for trying to deprive the serious collector of a comparatively harmless form of sport, which affords many hours of healthy exercise in the spring and pleasant evenings in the winter, especially when, as is often the case, he cannot afford the more expensive and popular forms.

Yours faithfully,

R. F. Meiklejohn.

18 Kentmann Street,
Reval, Esthonia.
22 July, 1922.

Nesting in Esthonia.

Sir,—I send you herewith two skins of *Colæus monedula collaris*, which are typical of the Esthonian birds, and which I shot near Wesenberg, Esthonia. I think they are a pair from a clutch of six eggs which I took. The female I am sure of, and nearly sure of the male. Possibly they may be of some interest. I am afraid I have to record a disappointing spring. Everything was very late, and there was still snow at the beginning of May. As a consequence the early birds were, with few exceptions, late in nesting, and the later ones started at the same time, and the season was very short. Further, I could not get away much, and one cannot get anybody else to collect here. Koch, who was going to help me, has been detained in Germany by his wife's health. I got a Goshawk and three eggs, a Hawfinch and six, but only took two, as it is only recorded as a "doubtful breeding species here," and unluckily somebody else took the others. I found a Scarlet Grosbeak and one egg, the rest having been taken. Got c./6 and c./5 Northern Bullfinch: Marsh, Great, and Willow Tit: Great Crested Grebe: Garganey: Little Tern: Pochard, etc. Found a c./5 Woodchat Shrike, but these were just hatching. A forester sent Mr. Weltz two clutches of Great Snipe (four each), but packed them so badly that they were all hopelessly broken. However, he writes that the way to find them is to go out just after heavy rain, and then the bird gets straight off the nest. I hope to try again next year. I went down to Hapsaal purposely to get *Erolia alpina* (which, despite Hartert, I and all here say is "*schintzi*").

I could not get away till the beginning of June, and after much hunting found three nests, all with the young just hatched or hatching. They must have begun almost before the snow was off the ground. Got two nice blue clutches of Black-headed Gull and a c./3 Common Tern, with two blue and one whitish egg.

If I am still here next year, as I expect to be, I must hope for more luck. I failed to get either Melodious Warbler or

Siskin. The latter were nesting in some numbers in the tall forests near Kono, and at Wesenberg, but I could not spot them. The former I thought I had got in my garden, where a bird is always singing—a nest at the top of an apple-tree, about 15 ft. from the ground, and near where I found the nest last year with young. I got up to it, and to my surprise found it was a Garden Warbler. One rather interesting thing is that in my aviary here, on the verandah, I have got a pair of Northern Bullfinches to nest, and the hen is sitting on four eggs. I cannot see them well, but I fear they all look "miniatures" and not much larger than Titmice eggs. I hope I am wrong, as one learns so much by watching the nesting operations in captivity. I notice the male takes no share in incubation.

I have been trying to get skins of the Buzzards here, but now all properties have been confiscated and divided up, the birds of prey get no peace, and are already very scarce. I found a pair of *Buteo* nesting, but they were undoubtedly *Buteo buteo*. The interesting question is whether the smaller form is "*vulpinus*" or "*zimmermanni*."

R. F. Meiklejohn.

18 Kentmann Street,
Reval, Esthonia.
9 July, 1922.

White-tailed Eagle on the Bass Rock.

Sir,—In the first part of the 'Ootheca Wolleyana,' published in 1864, the following statement occurs on page 49 among the notes on the White-tailed or Sea-Eagle, viz., "It used to build on the Bass Rock, and long ago had two breeding-places in Dumfriesshire [Mag. Nat. Hist. ser. 2, vol. i. pp. 119 and 444], and even near Glasgow." A number of years ago I endeavoured to find out what historic or other evidence Wolley could have had for the first part of this statement, but met with no success. On turning to the volume (for 1837) of the magazine cited, it was found—as one would expect—to have reference to the Dumfriesshire eyries, no allusion whatever being made to the Bass Rock.

I then applied to the late Prof. Alfred Newton, who edited Wolley's notes, but he could not throw any light on the subject; and after a good deal of barren searching in the pages of likely literature, I could only come to the conclusion that Wolley had in this instance probably made some mistake. The paragraphs in which the statement appears were written by him in 1853 for Hewitson's use. The statement is repeated—again without any indication of its origin—in the first volume of the 4th edition of 'Yarrell,' and of course it has since found its way into other publications. The idea of a pair of Sea-Eagles having their eyrie on the Bass makes a strong appeal to the imagination, and naturally writers of articles on the bird-life of the famous Rock like to introduce it. Its re-statement quite recently in two articles in the daily press has revived my interest in the matter, and prompted me to send you this letter in case some member of the B.O.U. can solve my difficulty. Personally, the middle of a great Gannet colony does not appear to me to be a nesting-site quite suited to the tastes of the White-tailed Eagle. If Wolley had said St. Abb's Head, there would at least have been the "Earnsheugh," a cliff to the west of that point, to give colour to the assertion.

William Evans.

38 Morningside Park,
Edinburgh.
22 August, 1922.

A Correction.

Sir,—I wish to make the following correction to my paper, "The Birds of Tasso and adjoining Islands of the Rokelle River, Sierra Leone," in 'The Ibis' for April 1921, page 271: *for* Blue Flycatcher (*Platysteira cyanea*) *read* Blue Flycatcher (*Elminia longicauda*).

Willoughby P. Lowe.

Gorsemoor, Throwleigh,
Devon.
28 June, 1922.

Systema Avium.

The first half of the volume of the 'Systema Avium' dealing with the Ethiopian Region, and compiled by Mr. W. L. Sclater, is now completed, and is being passed for printing by the Special Committees of the B. O. U. and A. O. U. Before, however, actually going to press, the Committee of the B. O. U. wish to ascertain what number of members of the Union and others are likely to subscribe for it, as the price must depend to a great extent on the number of copies sold. The cost of printing the volume will be considerable, and the Committee are afraid that, unless they are well supported by the members, they will not be able to finance the work. A blank form of subscription will be found in the present number of 'The Ibis'; this form members and others are invited to fill up and return to the Hon. Secretary. It is impossible at present to fix the exact price of the complete volume dealing with the Ethiopian Region, but the Committee believe that it should not exceed £2 2*s.* 0*d.* They hope they may be able to fix the price at considerably less.

Another Ringed Swallow in S. Africa.

Mr. Witherby records (Brit. Birds, xvi. 1922, p. 81) the recovery of another ringed Swallow in southern Africa, making six in all. This individual was ringed as a nestling in Berkshire on 20 August, 1921, by Mr. A. Mayall, and recovered on 8 January, 1922, by Mr. E. Greeff, near Jensenville, in eastern Cape Province. It is a remarkable fact that all the Swallows hitherto recovered in South Africa are from the eastern half of the continent, and it will be interesting to discover the line of migration, whether by the east coast or the west coast or along the Nile valley.

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